

COAL MINING

FEBRUARY, 1952

VOLUME 29, No. 2

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36" Coal Recovery Drill



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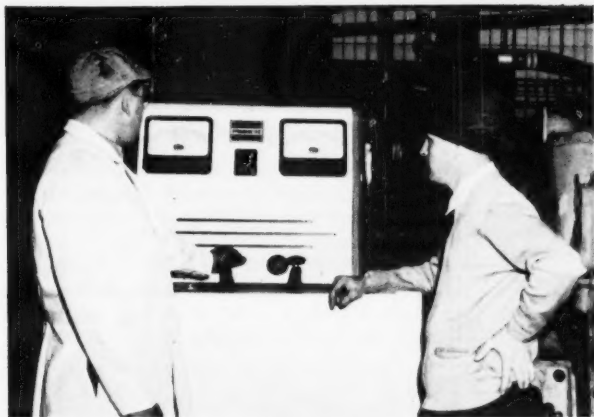
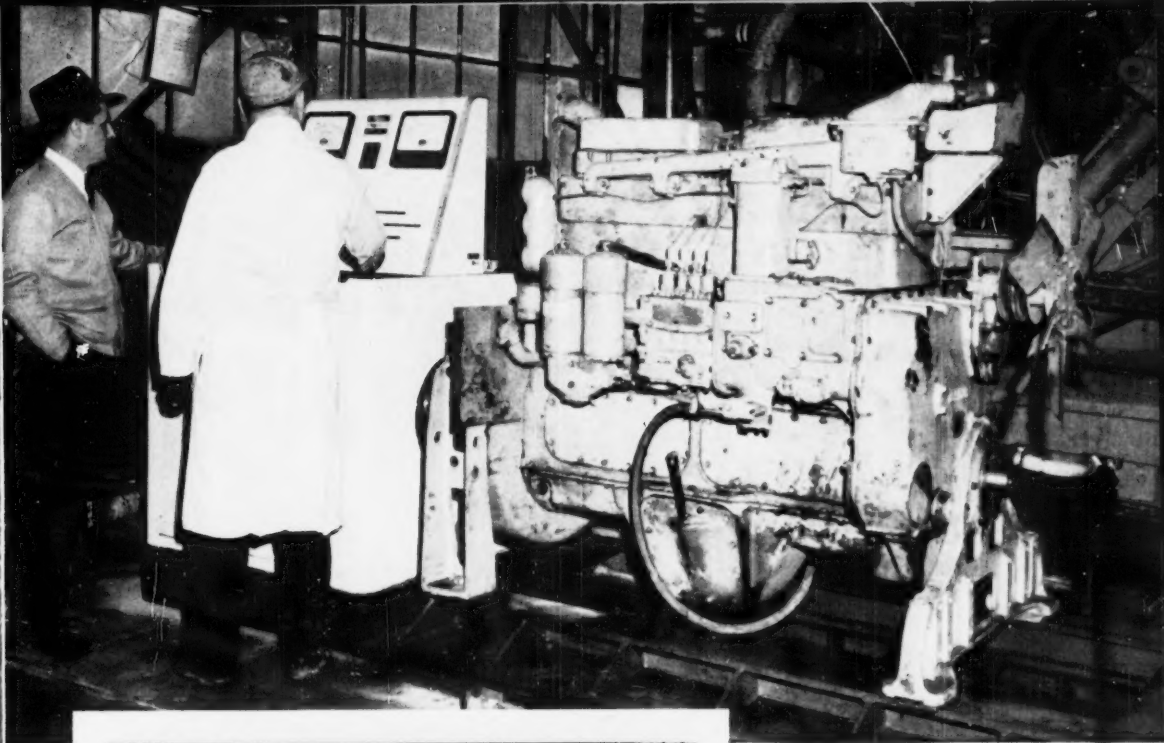
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We've installed this Turbo-Closed System Engine Dynamometer in our Pittsburgh Service Shop and are adding one in our Clearfield Plant. These dynamometers enable us to properly run-in rebuilt engines, and adjust them to factory specifications resulting in exact H.P. and R.P.M. for your requirements. They also aid in precision setting of new engine R.P.M. and Brake H.P. when necessary. This machine has eliminated field service calls for rechecking engines after installation — we know they're right! Actual load conditions are produced for testing purposes.

At left are two Beckwith Engine Experts, Pittsburgh Service Manager Clyde Kaltenbaugh and Technician Bill Hauck, checking speed and power ratings of a D7 engine.

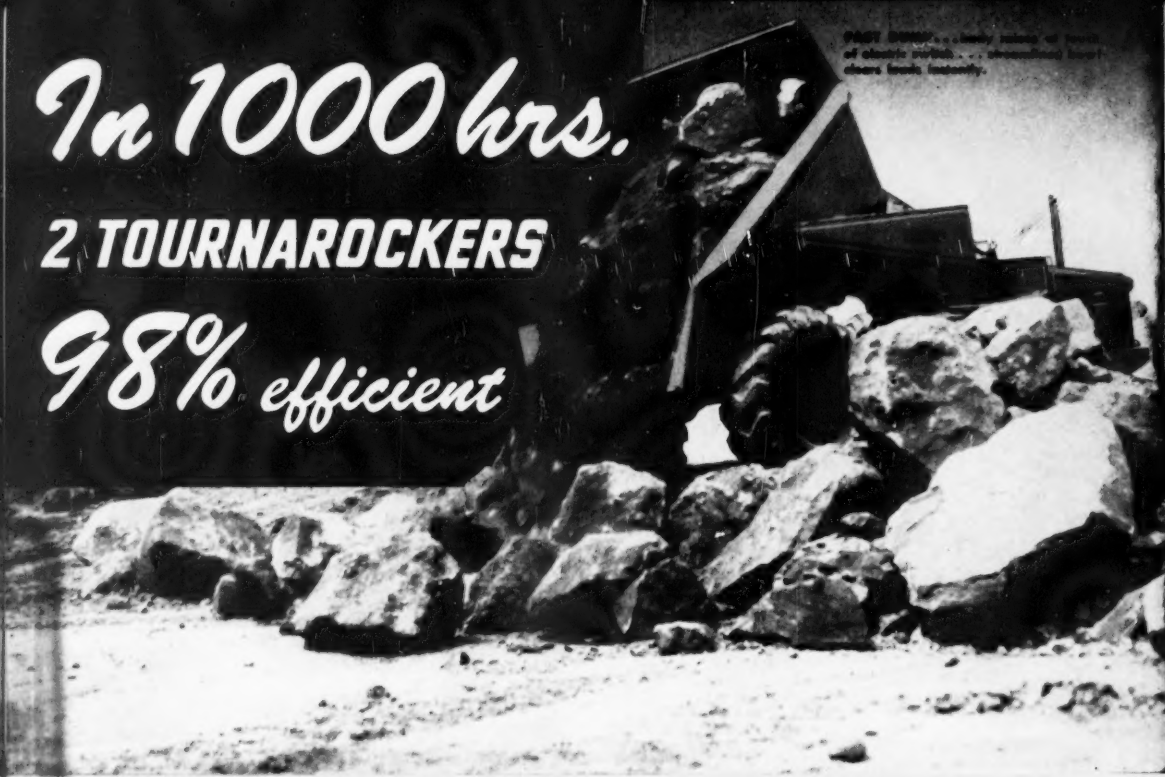
Frantz Construction Company knew "Caterpillar" power was right! A D318 Engine powers their Bucyrus-Erie 92-B Shovel stripping near Uniontown, Pa.



In 1000 hrs.

2 TOURNAROCKERS

98% efficient



At New Haven, Connecticut, Fred Onuparik Construction Company tackled a difficult hauling problem. The job involved moving 70,000 cubic yards of sandstone from a short 1700' stretch to relocate heavily-traveled U.S. 1 around the city's business district. Both loading and dumping areas were narrow and restricted . . . haul roads, rocky and rough. Mobile, high-speed, off-road haulers were needed for lowest cost operation . . . Onuparik's LeTourneau Distributor had the answer . . . 2 rear-dump, 16-ton C Tournarockers.

Teamed with a 1 1/4-yd. shovel and working 2000' cycles, the 2 big, rubber-tired "C's" delivered up to 1200 cubic yards of heavy shot rock per day. Each 16-ton rig took 8 to 10 passes from the well-heaped dipper . . . carried 10 pay yards per load. "We're very well pleased with this performance," reports Owner Fred Onuparik, who later used his 2 LeTourneau rear-dump haulers on a 55,000-yd. relocation of Connecticut State Rt. 109 between Thomaston and Watertown.

Handling mostly rock and gravel, Onuparik's rigs worked approximately 1000 hours on these 2 jobs, with a mechanical operating efficiency of 98%. Both 165 h.p. "C's" were driven job-to-job under their own power . . . completing

the 45-mile trip from New Haven to Thomaston through very heavy traffic in 3 hours.

Ability to maintain high standards of output and mechanical efficiency under all job conditions is the reason why progressive dirtmovers like Onuparik are turning to rear-dump Tournarockers for low-cost hauling of rock, gravel, and other materials. Your LeTourneau Distributor will be glad to show you job-proved facts and production figures on new 18-ton "C's", as well as on 9, 35, and 50-ton Tournarockers. Call him, or write TODAY.

Tournarocker—Trademark 82378

BIG TARGET...Tournarocker's 12.5' x 8' top opening speeds shovel loading... reduces spillage.



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COAL MINING

Vol. XXIX FEBRUARY, 1952 No. 2

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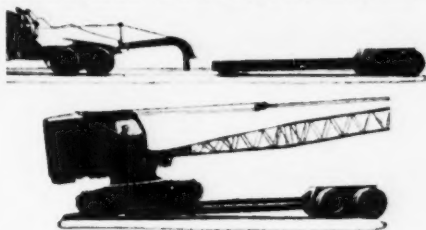
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**A short picture-story of R&S services and facilities available
to you for your next engineering and construction project
—the whole job or any part of it, any time you are ready.**



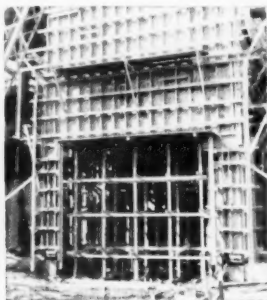
600 tons-per-hour of run-of-mine coal: that's the capacity of this new preparation plant at Peabody Coal Company's Pana Mine No. 17. No matter how big the project, R&S is staffed to handle it—any place in the world, any time you are ready.



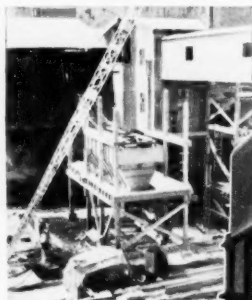
This plant was dismantled, moved and re-erected at this new site by Roberts and Schaefer Company construction forces. You can save time, money and headaches by consulting R&S when you contemplate changes in your plant.



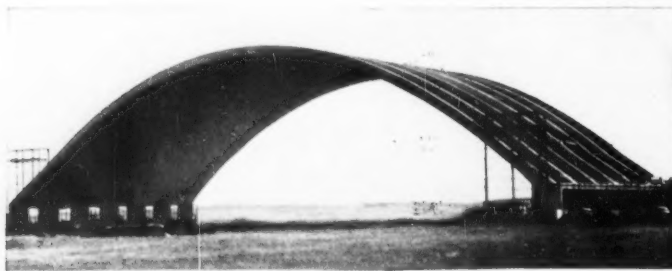
Here is steel construction at its best—this enormous bin designed and constructed by Roberts and Schaefer Company for the Blue Diamond Coal Company.



When you see form work like this on a concrete construction project you know it's being done right—the R&S way.

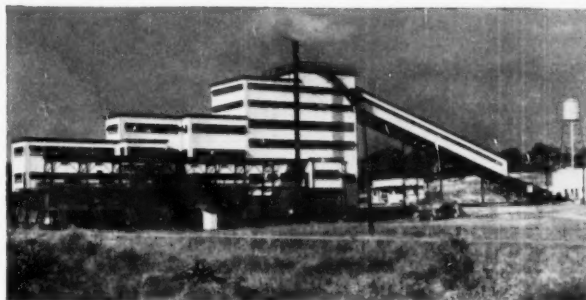


If timber construction is desired for reasons of economy or availability, R&S construction forces know how to handle it.



This modern coal handling station is an example of R&S design applied to a basic materials handling problem.

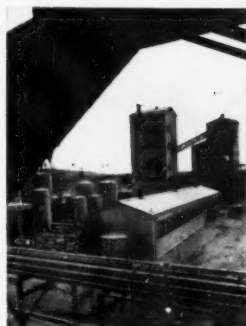
This R&S-engineered "shell roof" concrete hangar has 340-feet unsupported span—the longest in the world. Your next project may not require this calibre of engineering excellence, but it is assuring to know that such engineering is available when you need it—and it is an added guarantee that "conventional" assignments will be handled with complete understanding and competence.



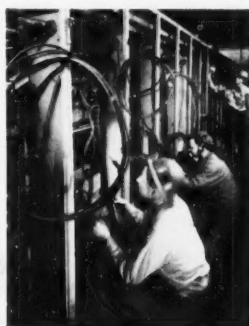
This R&S-constructed preparation plant was so successful in operation that the owner ordered a practically identical plant for another mine. Repeat orders are a natural "by-product" of skilled construction . . . completed on schedule.



Engineering and construction of this coal preparation plant, as well as the manufacture of its air-washing equipment, were all done by Roberts and Schaefer Company—the whole job, start to finish. Undivided responsibility can cut costs on your next project too.



R&S was selected to construct this preparation plant at the Bureau of Mines hydrogenation project, Louisiana, Mo.



"Install it and see that it works" is the policy at R&S. Installation of equipment is only one of the many Roberts and Schaefer services.



In this instance R&S worked with the plant owner on everything from site selection and development, through engineering and construction of the basic plant and subsequent additions.



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Coal will continue to supply all the heat, light and power America needs. Of America's entire fuel reserves, 92% is coal and America's mines are the most efficient in the world!

Are you responsible for choosing a fuel to generate power in a factory—to heat a home or other building? Then think of the many advantages of *bituminous* coal!

DOWN-TO-EARTH FACTS ABOUT COAL!

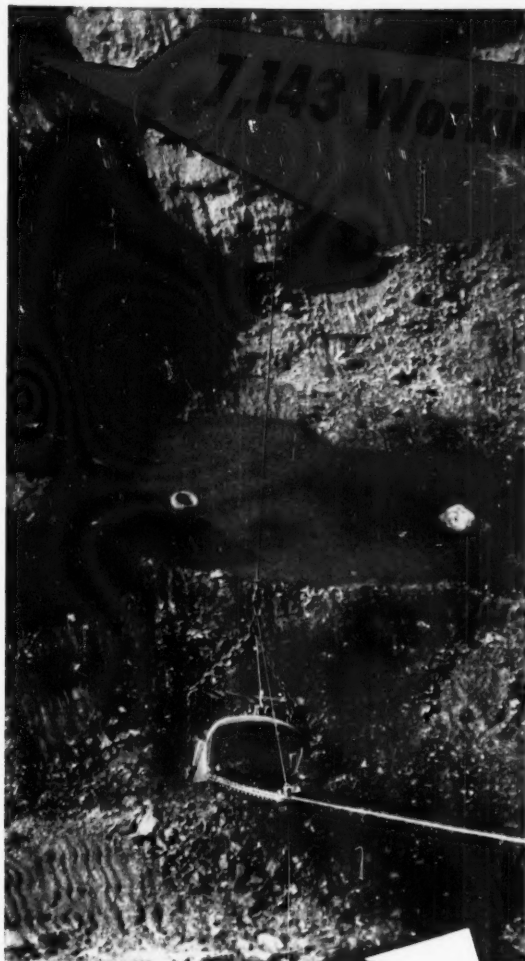
- ✓ Lowest-priced fuel almost everywhere!
- ✓ Labor costs are cut with modern boilers and automatic handling equipment!
- ✓ Easiest and safest to store of *all fuels*!
- ✓ America's vast reserves make coal's supply always dependable!
- ✓ Dependable supply assures price stability!
- ✓ A progressive industry strives constantly to deliver an ever better product at the lowest possible price!

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➤ A Department of National Coal Association, Washington, D. C.

FOR ECONOMY  AND DEPENDABILITY

YOU CAN COUNT ON COAL!



ESCO 9-yard stripping dragline owned by J. Robert Bazley, Inc., working at Logan stripping near Mt. Carmel, Penn.

and still on the job 3 shifts a day...

The ESCO dragline bucket shown at the left went into service in April, 1945. As of September 30, 1948, it had —

Operated 7,143 hours.

Moved 1,411,915 yards of original material.

Maintenance cost during this time averaged .00589 cents a yard. This record was made in the anthracite region of Pennsylvania where digging conditions are notoriously severe — and the bucket is still operating three shifts a day.

Performance like this is typical of ESCO dragline buckets in all parts of the world. It is made possible by sound engineering and bulk-saving construction which provide for:

Clean cutting lip for positive bite

Balance for smooth carrying

Control for exact spotting

Hollow cast arch for greater strength

Streamlined for quick dumping

Manganese steel for all wearing parts

No unnecessary bulk.

Result: More payloads per pass, and more passes per hour.

ESCO dragline buckets are made in four types — medium, standard, stripping and heavy duty, in capacities ranging from $\frac{3}{8}$ to 20 yards. One of these buckets will do your job faster and easier with less maintenance and "down" time. For specifications and other detailed information, see your nearest ESCO representative or fill in and mail the coupon below. Electric Steel Foundry, 2163 N.W. 25th Avenue, Portland, Oregon; 722 Porter Street, Danville, Illinois. Offices in Pottsville, Pa.; Eugene, Oregon; Chicago, Honolulu, Houston, Los Angeles, New York, San Francisco, Seattle, Spokane.

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ESCO stripping dragline bucket, with manganese steel parts shown in red.

*Cut down overhead
and increase pay-load.*



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LONG BODY LIFE—LOW UPKEEP

Whenever there is hauling being done there you will find Penn Steel Dump Bodies in use. Truckers select Penn Steel Bodies for their high quality, rugged construction. Here are steel dump bodies that last longer under severe usage . . . dump bodies that have proven their worthiness and economy over the years.

FOR HEAVY HAULING

The Penn Tandem Trailer Body shown above is a rough and ready fellow designed for extra heavy hauling. This 22 cu. yd. job with sides of 10 gauge and floor of 7 gauge steel permits increasing the payload on a coal hauling, stripping or construction project . . . here's the answer to high operating costs!

PENN TELESCOPIC HOISTS

Penn Telescopic Hoists lift heavy loads smoothly . . . powerfully with no danger of bending or twisting. There are no small pistons or working parts to wear. There are no cams, levers or arms—lifting power is applied directly to the load.

The 713 Long Twin Hoist used on the Tandem Trailer Body will easily handle up to 30 tons. Steel sleeves are polished and ground; oil pump is heavy duty roller bearing type; hoist meter for jacks; sturdy hinge and 2 1/2" round shaft; heavy duty body sub frame with box channels.

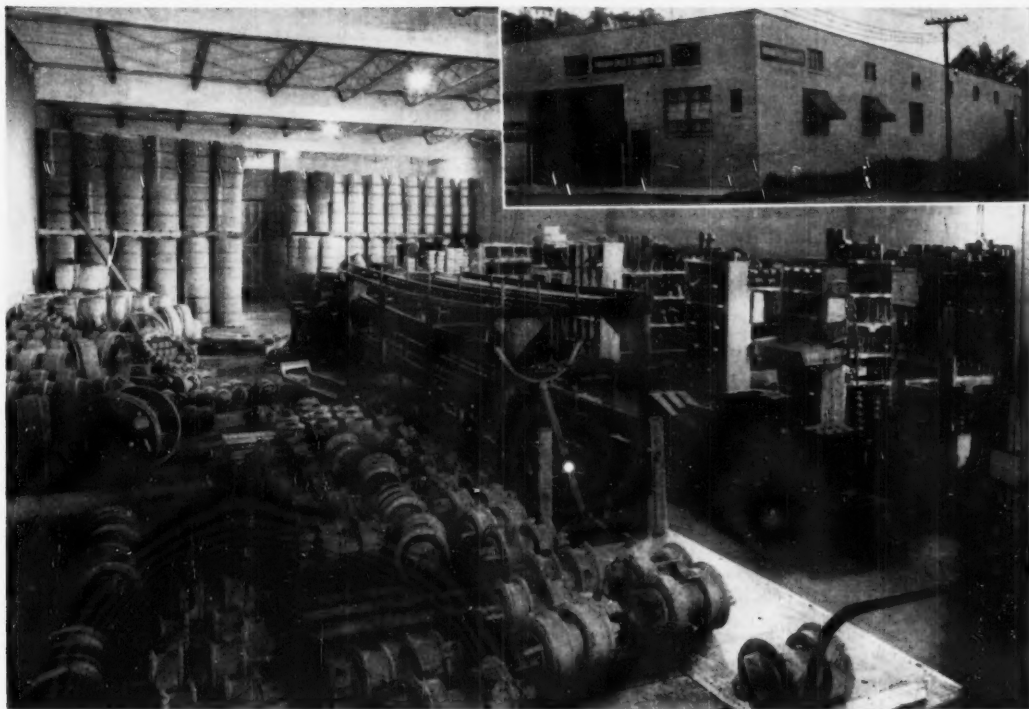
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DIVISION**

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TAYLOR-WHARTON IRON & STEEL COMPANY — TISCO cast manganese steel teeth for all makes of shovel dippers. Repointers and point bars for rebuilding teeth. TISCO crusher jaws. TIMANG welding rod.

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General view of the Jeffrey Roof Drill showing the Drill arm assembly

New JEFFREY 56-RD ROOF DRILL

(Patent Pending)

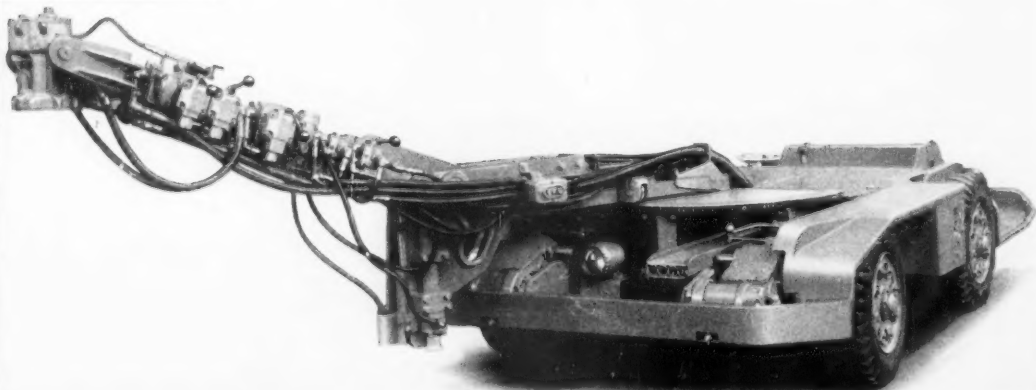
SPEEDS UP ROOF-BOLTING OPERATIONS

● The New Jeffrey 56-RD Roof Drill features a specially-designed Arm, hydraulically operated and mounted on either a self-propelled track type or rubber tired truck . . . provides a reach of 10 ft. 10½ in. each side of center line of machine.

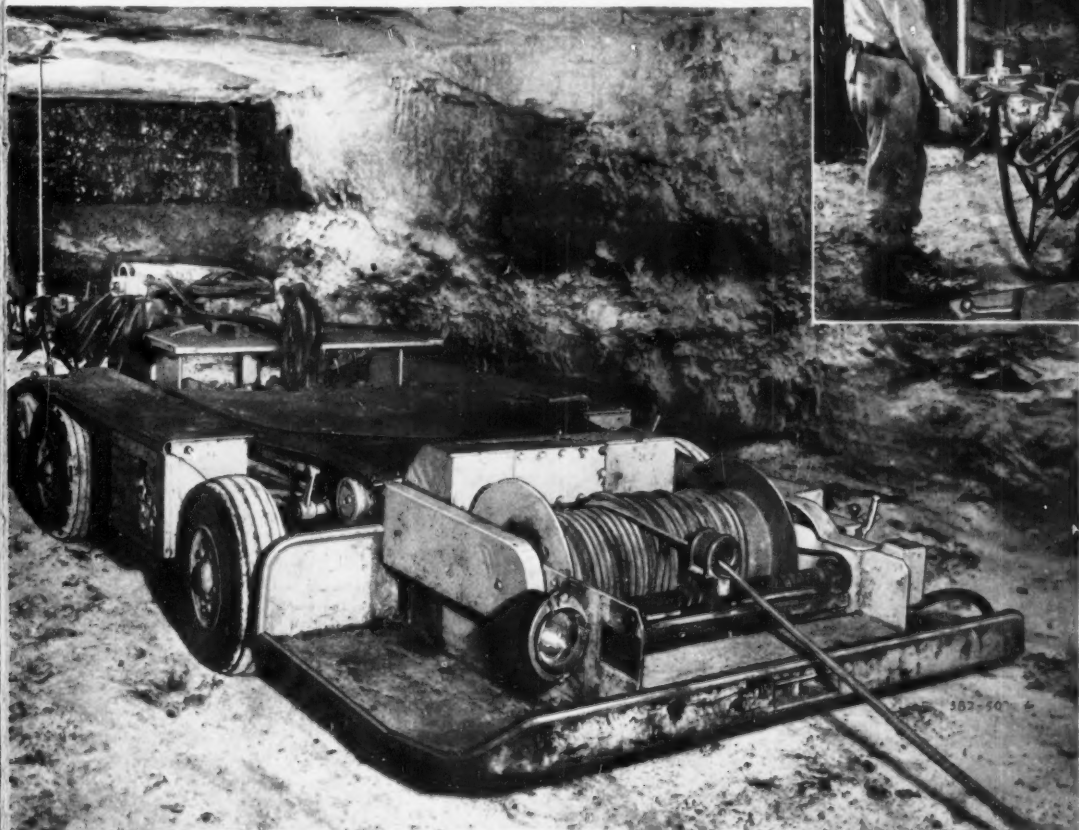
Straight-line feed for the auger and parallelism to its starting position are maintained by means of cams which shorten and lengthen the Drill Arm and make the necessary angular adjustments as Drill is fed upward.

The drill head includes maximum tongue power wrench (see inset on other page) for tightening the roof bolts.

If you want to cut costs in Roof Drilling, give our engineers a chance to explain the Jeffrey Roof Drill in detail. Write today.



Right—close-up of the Jeffrey Roof Drill showing the impact wrench in use for anchoring and tightening bolts.



Large view above shows the Jeffrey Roof Drill at work. Operator has the auger in the socket and is drilling a roof hole. Water, introduced at drill chuck, is carried through drill rod to drill bit in the hole to prevent dust.

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Advantages and Problems of Roof Bolting

By Albert R. Hood

Assistant Superintendent Warwick Mines, Duquesne Light Co.

The captions and pictures in this story go with the text matter on pages 9, 10, and 11 of the January issue. The text matter in pages 9, 10 and 11 of the January issue go with these captions and pictures. Editor.

Our company introduced roof bolting early in 1949 and by the end of June of that year extensive tests were under way in 5 mines to determine the effectiveness of this type of roof support. These 5 mines, 4 of which are in the lower Cedar Grove Seam and the other in the Eagle Seam are now roof bolting on all sections.

The roof in the Cedar Grove Mines varies considerably from one area to another. Typical conditions and types of roof support employed are:

TYPE "A" — An immediate top consisting of 8 to 12 inches of medium to soft laminated shale overlain with 0 to 20 feet of soft sandy shales which strata is in turn overlain with 40 to 60 feet of heavy grain sandstone. The immediate top is somewhat similar in action to the draw slate found in the Pittsburgh Seam of Western Pennsylvania in that it tends to deteriorate rapidly when exposed and allowed to settle on timbers. The sandy shales which have little consolidation then come down with tremendous weight. Conventional timbering under this top required 2 to 3 7"x9" cross bars per cut. Entries were driven 18' wide and rooms were restricted to a maximum width of 22 feet. The weight of this top as it settled very often choked off the butt entries and forced abandonment of rooms half driven.



ALBERT R. HOOD

With roof bolting this top is now supported by one or the other of 2 patterns:

(1) 8—48" to 60" wedge type bolts 1" in diameter on 4' centers per cut with 4—6" mine props per cut carried approximately 2' off the rib line, or,

(2) 6—48" to 60" bolts in regular pattern installed through and supporting 3"x8"x14' cross bar. (3 bolts per cross bar). The lateral centers in this case are 4' and 6" mine props are set under each end of the bar. The roof bolts, by holding the immediate top in place, apparently stop deterioration of the top so that it supports itself while recovery work is in progress. (Photos of Type "A" Top).

Under this system entries are now driven 19 to 20 feet wide and rooms are worked out at widths up to 28 feet. The additional height gained has also relieved shuttle car haulage and traffic of equip-

ment from place to place which was seriously retarded by conventional timbering.

TYPE "B"—An immediate top of laminated carbonaceous shale 0 to 15" thick, overlain with a soft but well consolidated dark shale in laminations of 1 to 3" thick for a distance of 5 to 15'. This in turn is overlain with a conglomerate sandy shale.

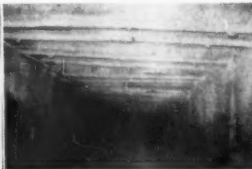
This top deteriorates less rapidly than that described under "A", and could usually be supported by 7"x9" cross bars of 4 to 5 foot centers. It was also slow to set down so that a fairly good working condition was provided at the face with weight and deterioration showing 6 to 10 cuts out by. It was, however, liberally sprinkled with "Kettle Bottoms," which are fossilized tree butts in vertical position. These were not always visible and tended to fall out without warning after a few days exposure.

With conventional timbering entries were driven 17 to 18' wide and rooms were restricted to 22 feet.

This type top is now supported using 3 1/2" bolts with expansion sleeve anchors. 8—40 to 48" bolts, set on 4' centers, are used per cut. 2 mine props are set each cut and these are approximately 2' off the rib line. Entries are now driven 19 to 20' wide and rooms up to 25 feet. The additional height and



Self Trimming Rubber Tire Mounted Permissible Roof Control Drill for Drilling Vertical and Angle Holes.



Timbers and Roof Bolts installed in Section.



Roof Bolts Still Securely Anchored after Fall of Roof Coal and Draw Slate.



Showing Upper 4 ft. of Pittsburgh Seam and the Immediate Overlying Strata.



Conventional Method of Timbering Used Prior to Roof Bolt Installation.



clearance gained has materially improved traffic of track mounted equipment as well as sectional nousekeeping and other safety factors.

TYPE "C" — A third top condition encountered in this seam consists of a sort clay streaked shale 4 to 10 feet thick overlain with shaley fire clay streaked with rash coal. This condition had proved virtually impossible to control with conventional timbering. Two to four feet of the immediate roof often came down with the cut or while the cut was being loaded out.

The balance often sheared up the ribs and settled tremendous weight on the timbers behind. Conventional timbering required 2 to 3—7"x9" cross bars per cut, set as close to the face as possible, and the addition of the supplemental timbering behind to keep haulage and air-ways from choking off completely. Entries were driven a maximum of 15 feet wide, rooms 18 feet and recovery was often as low as 52 per cent. Roof bolting alone has not been successful in holding this roof. However, when used in conjunction with conventional timbering, they have made possible the safe and economical mining of considerable areas previously impossible or very costly to recover.

A typical roof support pattern for this condition now provides 8—1"x60" wedge type bolts on 4' centers supplemented by 1 to 2—7"x9" cross bars per cut. With this support entries may be widened slightly to 16 to 17 feet and supplemental

timbering to maintain clearances is not excessive.

The roof in the Eagle Seam usually consists of 8"x4" of heavy, coarse-grained rasy shale overlain with massive sandstones 30 to 60 feet in thickness. In some areas this top was extremely difficult to control with conventional timbering. This condition was often further aggravated by rolls in the top which so reduced clearance that truly adequate support was not possible.

In other areas adherence of the immediate top to the sandstone is such as to require only nominal timbering. However, shuttle car haulage and sectional traffic were slowed appreciably by sagging cross bars at the cross cuts.

With roof bolting we have been able to support this roof without cross bars, thereby practically eliminating interference from height and greatly reducing the amount of fallen rock that must be handled. A typical bolting pattern in this mine calls for 6—1 in. x 30 in. to 40 in. wedge type bolts per cut on 4ft. lineal and 5 ft. lateral centers with 4—6 in. mine props per cut set approximately 2 to 4 feet off the rib line. Entries are driven 19 to 21 ft. wide and rooms up to 28 ft. wide.

Methods and Practices

In our early experimenting we tried various methods of roof drilling, starting with CP Drills mounted on timber jacks, hydraulic operated rotary drills and stopers, first

operated from small mobile air compressors and finally by compressed air distributed underground from large outside compressors.

Our roof bolting mines are now equipped with 1100 cu. ft./Min. stationary air compressors at the portal. Underground distribution of the compressed air is effected through 6 in., 5 in. and 3 in. mains to the boom or entrance to the section and through secondary 2 in. lines to within 100 feet of each working face. The mains are laid in the main haulage entries on blocks near the rib line. The secondary piping for track sections is laid on the bottom up the nearest pickup out by the working faces. On trackless sections the secondary piping is carried overhead supported by hangers from the roof bolts. One-inch plug valves are provided at each entry, for connecting the hoses for air-operated equipment, which are 100 feet in length to reach the maximum distance to the face.

The standard roof bolting crew is usually 2 Stoper Operators and 1 Helper who assembles and assists the Stoper Operators in inserting the bolts. All bolts are driven up using a hammer attachment on the stopper and tightened with an air-driven impact wrench. In a normal day this crew will install 96 to 104—60" bolts under conditions encountered in our mines.

A problem not yet completely solved is that of transporting roof bolting equipment and supplies from one place to another on the sections. The equipment may involve 2 stopers, 1 impact wrench, 2 dust collectors, 100 ft. of high pressure hose; secondary hose for the stopers, impact wrench and dust collectors. Add to this tools, wrenches and lubricants and 100 or more roof bolts and have quite a stack of material. Where drilling is done with water there must be added a pressure tank and water hoses. At present we transport this material in specially designed cars on track sections manually propelled from place to place. On track-

(Continued on Page 22)

Inventive genius is an individual effort and cannot be forced according to conclusions reached from a study made by Raymond H. Van Zelt, graduate student of psychology at the Illinois Institute of Technology and Dr. Willard A. Kerr, Associate Professor of Psychology. Based on a study of 194 members of a technical research organization, three traits characteristic of the more creative individuals were indicated: more extensive formal education, disbelief in group effort and belief in self-determination of deadlines.

"Greatest productivity of the individual is achieved under conditions of about 25 hours a week of assigned hours and 17.5 hours of spontaneous, voluntary related home work."

"Those who work the longest hours do not have the greatest productivity."

"Creative ability, opportunity and industriousness are the three indispensable qualities of a genius."

"Work where they please when they please are the characteristics of the highly productive individuals," according to the report.



Leslie C. Gates, Pres. Ferguson-Gates Engineering Co., spoke on Dust Control in coal mines.



Mr. H. E. Mauck, Gen. Mgr. Mines, Olga Coal Co., was Chairman of the afternoon session.



Mr. H. A. Quenon, Div. Mgr., Eastern Gas & Fuel Asso., spoke about Continuous Miners in Pillar Extraction. R. E. Zimmerman, Chief Coal Preparation Engineer, U. S. Steel Corp., left, spoke on European Coal Preparation Practices.



Joseph Pursglove, V-pres., in charge of research, spoke about the economy of coal conversion.

Fall Meeting of the West Virginia Coal Mining Institute

The Fall Meeting of the West Virginia Coal Mining Institute was held at the Summit Hotel, Uniontown, Pennsylvania November 9 and 10, 1951.

Technical sessions began on schedule at 10 A. M. after one hour of registration. Mr. Max Forrester, Vice-President, Pittsburgh Consolidation Coal Company was Chairman of the first session, devoted to Continuous mining. "The Colmol in the Sewickley Seam" was the theme of the first paper by F. R. Zacher, General Superintendent,



C. R. Bourland, President of the Institute, acted as toastmaster at the Banquet.

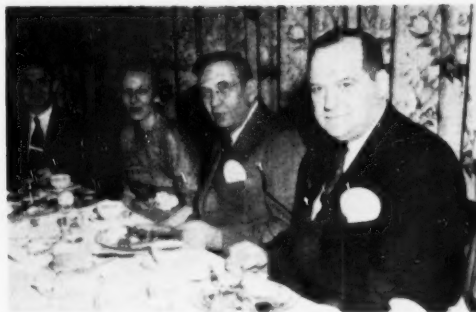
Christopher Coal Company, Morgantown, West Virginia. This subject has been discussed at the Off-the-Record Meeting of the Pittsburgh Chapter of the A.I.M.E. which has been covered by another report in COAL MINING. We might repeat that COAL MINING will take a complete set of pictures of the Colmol in long face mining on the retreat, loading directly onto a face conveyor, letting roof fall as close to operations as possible. This will be the first step toward automatic mining.



Left: M. F. "Billy" German, retired, Morton Copper, Natl. Coal Assn.; R. G. Lazzell, Asst. to Pres., Island Creek Coal Co.; C. R. Nailor, V-Pres. Operations, Christopher Coal Co.



Left: Vig Zeni, President, Coal States Construction Co.; L. A. Connor, Supt., Trotter Coal Co.; E. W. St. Clair, Gen. Supt., Trotter Coal Co.; J. T. Sinclair, Field Engineer, Hewitt-Robbins, Inc.



Left: Mr. and Mrs. G. R. Spindler, Secretary of the Institute; R. C. Andrew, West Virginia Coal Operators Assn., and Joseph Moody, Pres., Southern Coal Operators Assn.



Left: Mrs. and Mr. Arch Alexander, Chief, Dept. of Mines, West Virginia, Jesse Redyard, Redyard Coal Co., and Geo. Higginbotham, V-Pres. Operations, Consolidation Coal Co.

"Continuous Mining in Pillar Extraction in the Pittsburgh Seam" was reported in a paper by H. A. Quenon, Division Manager, Eastern Gas and Fuel Associates. A discussion followed this paper and the meeting was adjourned for luncheon.

Mr. Arch J. Alexander, Chief, Department of Mines, West Virginia, presided. The guest speaker was James Hyslop, President, Hanna Coal Company, St. Clairsville, Ohio, who outlined present doubtful conditions in our society and advocated more philosophy in life.

The afternoon technical session was under the Chairmanship of H. E. Mauck, General Manager, Olga Coal Corporation, Coalwood, West Virginia. "European Coal Preparation Practices" by Raymond E. Zimmerman, Chief, Coal Preparation Engineer, United States Steel Corporation, Uniontown, Pennsylvania,



James Hyslop, Pres., Hanna Coal Co. was guest speaker at the luncheon.

was the first paper on the agenda. "Dust Control in Coal Mines" by Leslie Gates, President, Ferguson-Gates Engineering Company, Beckley, West Virginia, was the second paper and this paper is probably the first of its kind in the coal in-

dustry. It will be published in COAL AGE and should be read by every coal mining official.

There was a reception at 6:30 P. M. when all in attendance got the opportunity to exchange greetings. At the dinner, at 7:30, under the Toastmastership of the likable C. R. Bourland, President of the Institute and Vice President, New River Company, Mt. Hope, West Virginia, the guests were fed a good dinner. Color moving pictures of operations taken at Consolidation Coal Company's mines in West Virginia, by the Bituminous Coal Institute were shown. The guest speaker at the dinner was Ralph C. Mulligan, Director of Public Relations, Bituminous Coal Institute, Washington, D. C.

Since this meeting has been devoted to a discussion of only the newer things in our industry, the following fits into the subject and



Left: S. C. Higgins, Executive Secretary, New River Coal Operators Association; Murray W. Tuck, Division Manager, Brown-Fayro Co.; Mrs. M. W. Tuck; F. M. Davis, Brown-Fayro Co.



Left: Randolph MacGregor Moteath, Freeman Johnson, Fairmont Coal Operators Assn.; "Dick" Johnson, Mine Safety Appliances Co.; Joe and Betty Blackburn, West Virginia Dept. of Mines.



Left: G. L. Alston, Mine Safety Appliance Co.; W. L. Barruss, Jr., Supt. Oakwood Mine, New River Co.; Earl Lawson, Supt. Maintenance, New River Co.; R. E. Gerdetz and L. V. Caudill, Cardox Corp.



Left: E. H. Johnson, Kennametal Corp.; J. H. Edwards, Associate Editor, Coal Age; Oral Robson, Kennametal Corp.; D. C. Kidenour, Olga Coal Co.

could do good:

Last year industry spent in the neighborhood of one billion dollars in research and development, employing about 165,000 scientists, engineers and technicians assistants. This is more than twice the number of scientific research workers than in 1940 and ten times as many as in 1927. The continuous stream of new instruments, new machines and automatic devices that have saved the back of man and enriched his life, is evidence that research pays off.

One thing that links all the experimental sciences is their dependence on measuring processes. Instruments for making measurements—research tool—are based on discoveries of physics and designs of engineers, but they are adapted, refined and applied to all sciences. A striking development in newer

instrumentation is their universal usefulness.

Many significant developments have recently been made in instrumentation. Developments that may have significance to this story and this subject are the transmission of large quantities of data at high speed, data used in a specialized field of information handling which makes possible rapid transmission of all sorts of measurements in biological and physiological experiments on human and animal subjects which go freely about their accustomed routine. Although it has been said that the wealth of a nation depends upon the quality and quantity of its labor supply, only recently have economists recognized the importance of the study of human resources.

In the 1930's a group at the Columbia University began to develop

more realistic and valid assumptions about economics and group behavior. This was a cooperative undertaking from the start, financed by contributions from business and foundations, in which an economist, psychiatrist, sociologist, statistician and social worker participated. Much time and effort were devoted to the education of the members, so that the approaches developed represented a true integration of the disciplines. World War II interfered with this work but it is again under way, studying those problems and seeking solutions. Previous to World War II, work concentrated on labor, particularly unemployment. Three major manuscripts were written, namely: "Grass on the Slog Heap, a story of the Welsh Miner." "The Unemployed," and "The Labor Leader." Since the reactivation of the group, work has



Left: Mr. and Mrs. Donald Wiebe, Prof., West Virginia School of Mines; Arthur and Mrs. Melton, Consolidation Coal Co., W. Va.; James Cunningham, Bituminous Coal Institute.



Left: Frank R. Klesyk, Sales Supervisor and R. B. Thomson, Engineer for Firth Sterling Steel & Carbide Corp.; Mathew Turkovich, Director Preparation, Island Creek Coal Co.; R. C. Andrews, West Virginia Coal Association.



Left: Mr. and Mrs. Chas. E. Lawall, Asst. to Pres., C. & O. Railroad, and Mrs. and Mr. Dennis L. McElroy, V-Pres., Engineering, Pittsburgh Consolidation Coal Co.

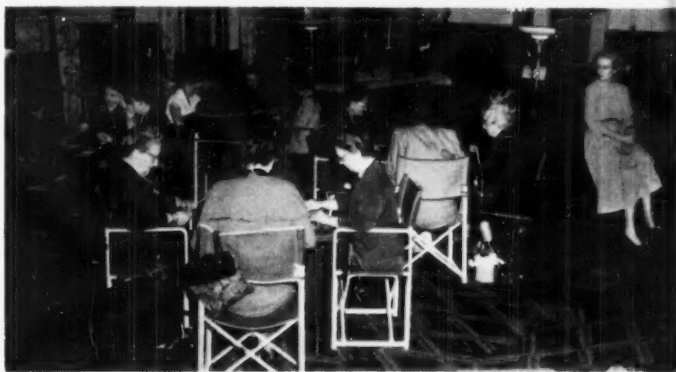


Left: Mr. and Mrs. A. S. Staab, Consulting Engineer; Mr. and Mrs. R. U. Jackson, Hewitt-Robbin, Inc.

been directed toward the significance of work for the individual and for society. The first of these studies titled "Occupational Choice" has been published.

With aid of the late scientific methods of handling large quantities of data at high speeds, the group at Columbia University, and others like it, will give us sorely needed information about our human problems. While that information is being assembled, it behooves the coal mining industry to appoint a group of capable men to study the problem and seek solutions in order to better handle situations that will arise from general applications of continuous mining machines, and later automatic mining methods.

In the meantime, the more ag-



The Ladies played cards while the men were in conference.

gressive coal mining companies such as the Jones & Laughlin Steel Corporation whose pictures of its Kefover shaft accompany this

story, are furnishing their men pleasant working conditions which makes better workmen, therefore they get better work.



J. Richard Lucas, W. Va. University; H. Eugene Mauck, Olga Coal Co.; Mrs. and Mr. Alexander Grant, Youngstown Sheet & Tube Co.



Left: Mr. and Mrs. Ray C. Huffman, Monongahela, West Penn Power Co.; and Mr. and Mrs. James H. Herb, E. P. Dandridge Co.



Left: C. C. Dovey, Owner, Cambria Fuel Co.; N. G. Montgomery, Jeffrey Mfg. Co.; George Roberts, Gen. Mgr. Mines, Bethlehem Collieries Corp.



Left: H. V. Brown, Brown-Fayro Co.; R. M. Hess, V. P. Operations, Morrisdale Coal Mining Co.; Richard Todhunter, President, Barnes & Tucker Co.

Central Pennsylvania Coal Operators Close 1951 Golf Season

Mechanical Brain Is Getting Numerous, Simpler

The golf playing Central Pennsylvania Coal Operators and their friends held the last meeting of the 1951 season at the Sunnehanna Country Club, Johnstown, Pa., in October. Being late in the season, the attendance was not what was expected, however a very enjoyable time was had by those who did attend.

At one time these golf parties were attended by hundreds of coal and allied industry men but got out of control and the Country Club denied them the use of its premises. It could do the industry much good if these meetings would draw hundreds again and after dinner listen to a good speaker who would tell them of the new machines and methods of procedure that have possibilities in our industry.

Reports of successful operations of the mechanical brain are becoming



Left: Robert J. Emigh, General Superintendent, the Morrisdale Coal Mining Company; David B. Willward, State Mine Inspector; Joe Williams, Sales representative for W. L. Potter Company

ing numerous. Recently a reporter for the St. Louis Post-Dispatch wrote a very enthusiastic story of

his visit to the office of the Monsanto Chemical Company which is paying \$2,000 a month rental for



Left: William Shields, Asst. Chief Engineer, Rochester & Pittsburgh Coal Co.; James M. Miller, Jr., C. B. Walters Co.; Frank W. Sheesley, Contractor, Johnstown, Pa.



R. L. McCain, Cleveland Rock Drill Div., LeRoi Co.; C. B. Watters, Manufacturers Representative; Sheldon Jones, Socony Vacuum Oil Co.



Left C. N. Replogle, Flood City Brass & Electric Co.; C. C. Dovey, Jr., V. P., Cambria Fuel Co.; M. Miller, Supervisor, P. R.R.; Alfred W. Wagner, personnel director, C. A. Hughes & Co.



Left: Fred Colley, Penn Machine Co.; Robert P. Schultz, U. S. Rubber Co.; Robert Bowser, Gates Rubber Co.



Left: Henry Kellander, Chief Clerk; Charles H. Smith, Outside For.; Joseph E. Cole, Supply Clerk; George Leonard, guest; all of the Pennsylvania Coal & Coke Co., Marsteller, Pa.



Left: Walter Potter, Manufacturers Representative; F. Dougherty, President, First National Bank, Spangler, Pa.; P. F. Jasik, COAL MINING.

a card programmed calculator, one of the early type of thinking machines that makes 36,000 effortless operations an hour and turns out a financial report which took 33 man-days to complete. By rolling a single sheet of paper into its mechanical typewriter and feeding a hand full of punched cards this mechanical brain prepares in 12 minutes a complete income statement. It can produce a column of multimillion figures covering the year to date, a comparison with the previous month, with the corresponding year, and with the budget, of the company's six divisions in 17 plants across the country. It is being prepared to solve the complicated scientific control of keeping inventories. Also to take time cards punched by workers each day, read from the card the number of hours worked, the rate of pay, overtime if any, then shuffle in other cards noting the worker's tax deductions, union dues, war bonds, social security, compute the gross pay, the net pay, write the check, charge the worker's time to the right department and all but hand the check direct to the employee's wife.

A "baby brain," and all-electronic computer that is very small and

compact, was recently revealed by the Jacobs Instrument Company, Bethesda, Maryland. About the size of a table model television set, it weighs around 100 pounds, solves problems fed to it with 300 tiny tubes no larger than nose used in hearing aids. It can add and also multiply at a very fast clip, getting the answer for addition of two 24-digit numbers in eight millionths of a second.

Its main value, the inventor, Donald H. Jacobs, claims will be in the automatic factory. There it can continuously work out problems involving such things as temperatures, pressures and quantities of materials, then adjust valves, motor controls, etc., to the settings necessary for maximum production of the desired item, he states. The machine could even be set up to order new materials when needed.

Another projected use for such an instrument, Mr. Jacobs says, is as a small and relatively inexpensive computing machine, simple to operate, for general office use. Once the machine is set up to handle a given type of problem, it would be quite easy for anyone to feed the problem into, and get the right answer from, the machine.

Electric "brains" may soon be helping machine tool cutters. The computer will do the necessary figuring, then its results will be fed by punched tape into a machine that does the cutting.

Such a development is foreseen from work being done at the Massachusetts Institute of Technology to make machine tools more useful. From design drawings of how a part should look, engineers figure out over what path a cutting tool would have to move in order to form the desired surface. This line-path is then divided into very small parts—0.0005 inch long.

The correct angle for the cutting tool to go during a certain time in order to make such a minute path is computed. Since figuring this involves a large amount of routine computation, electronic "brains" will probably be used.

Information computed by the machine will then be fed into the "machine director" which will move the cutting tool just a tiny space. The tool, therefore, can never be more than 0.0005 inch in error.

Once properly punched, the paper tape provides a permanent control and may be used again and again to make the same shape.

ADVANTAGES AND PROBLEMS OF ROOF BOLTING

(Continued from Page 15)

less sections a pneumatic tired hand truck, similar to the bomb carriers used for loading bombers is used. This method, however, is slow and often conflicts with other traffic. The congestion added by the introduction of this unit has been alleviated to some extent in track mines by driving 6 instead of 5 entries. However, this is only a partial answer. What is needed appears to be a self-propelled Jumbo Machine with permanently mounted

It is estimated that 30 billion dollars will be invested in industry in 1952 in order to cut costs and speed production. Concentration will be on "straight-line" methods and techniques. It is believed that ways and means of handling, processing of raw materials into finished products in one continuous flow where application could increase production 30% to 40% are being sought.

stopers, permanent connections for air and dust collection and with provisions for carrying roof bolts and auxiliary equipment. A properly designed Jumbo Unit might speed up roof bolting as much as 20%.

Results

The results of any change in mining practices should be appraised first in terms of Safety. Examination of the records reveals that a very substantial improvement has been made in this area. The following table records the number of roof fall injuries reported at our roof bolting mines during two year periods before and after the introduction of roof bolting. Lost time injuries from roof falls and from other causes are likewise compared. From this table it will be seen that roof fall injuries reported are reduced 77 per cent and lost time injuries from this cause are reduced 67 per cent since roof bolting was introduced.

These five mines produce approximately 45% of Island Creek Company's total tonnage. The improvement in safety resulting from roof bolting has therefore contributed materially to a safety record of which we are very proud. These mines individually have, as of December 1, 1951, produced from 1,279,000 tons to 2,992,000 without a fatality. Collectively they have produced 9,797,966 tons which almost equals the record of all (eleven) mines which as of December 1, had produced 10,446,157 tons since the last fatality.

| Mine, Type Top | Total R. F. Injuries | R. Falls | Other | Total Lost Time Injuries | % R. F. of Total | % of Reported Injuries |
|---------------------------------|----------------------|----------|-----------|--------------------------|------------------|------------------------|
| N. Cedar Grove "A" & "G" Top | | | | | | |
| Before | 16 | 7 | 57 | 11.94 | 8.56 | |
| | | | (2 fatal) | | | |
| After | 5 | 3 | 34 | 8.10 | 1.20 | |
| O. Cedar Grove "B" & "C" Top | | | | | | |
| Before | 15 | 4 | 25 | 13.6 | 5.55 | |
| After | 3 | 3 | 4 | 4.29 | 1.56 | |
| P. Cedar Grove "B" Top | | | | | | |
| Before | 9 | 4 | 8 | 33.33 | 7.8 | |
| After | 2 | 0 | 9 | 0.00 | 0.96 | |
| Q. Cedar Grove "A" Top | | | | | | |
| Before | 25 | 6 | 18 | 25.0 | 10.54 | |
| After | 3 | 1 | 19 | 5.0 | 0.77 | |
| R. Eagle | | | | | | |
| Before | 5 | 1 | 3 | 25.0 | 4.65 | |
| After | 3 | 1 | 10 | 9.1 | 2.78 | |
| All | | | | | | |
| Before | 70 | 24 | 111 | 21.6 | 9.25 | |
| After | 16 | 8 | 76 | 10.5 | 1.17 | |
| Percent Improvement | 77.1 | 66.7 | 31.5 | | | |

The safety figures shown indicate much improved working conditions inside these mines. The sight of sagging cross bars visibly supporting tons of rock causes all work to proceed at a very cautious pace. Work at the face is retarded by closely set cross bars and props that cannot be moved to permit cleaning. Haulage is slow due to lack of clearance and to the fact that a wrecked car may dislodge a timber and bring down the roof. With roof bolting all elements of the working cycle are carried out at a more normal work pace.

Historical statistics are of little value in evaluating the increase in production due to roof bolting. In our mines conditions may change radically from one half year to the next and, to determine the effect of improved top and less restrictive timbering, it is necessary to measure the effect on production of Height, Width, Bottom Condition, Grades, Rock Partings and Draw Rock, and Work Time at the face; not to mention factors of interference due to coal squeezing, hard cutting due to sulphur balls are jack

rock, etc. However, we have evaluated this improvement by extensive time studies and application of production standards to well defined mining conditions over the entire transition period and have concluded:

1. That we can expect approximately 25% additional production per section shift from the top described under "A" above when it is roof bolted;
2. that we can expect approximately 13% additional production from Top "B";
3. that the standard for Top "C" will range from 0 to 10% higher when roof bolts are used in conjunction with conventional timbering, varying with the amount of timbering required, and
4. that an increase of 5 to 25 percent can be expected under the eagle top depending upon local conditions of the roof and the amount of conventional timbering that would be required to support it.

At one mine production has increased an average of 100 tons of material per section shift since roof bolting was introduced. However, improved methods and production performances account for all but 40 tons of this increase.

Cost, likewise, fluctuates with many factors other than roof support. As an example, in pulling rooms off 2 adjacent butt entries, one using conventional timbering and the other using roof bolts to support a top as described under "A", the cost of sectional labor plus labor setting supplemental timbers was \$0.415 per ton lower when roof bolting and supply cost was reduced \$0.072 per ton. The total cost improvement was, therefore, \$0.487 per ton of clean coal. The indicated standard cost improvement due to roof bolting will range from approximately \$0.05 per ton under a Type "C" Top to \$0.35 per ton under a Type "A" Top. Factors affecting this realization will be the cost of the bolts versus the cost of conventional timbering; the expected increase in rate of production; the increase of reduction in the number of men required for roof support work on and off the section and possible reduction in the crews required to bring in supplies.

Teamwork among research, engineering, operating and management of coal mines and manufacturers of mining machinery, together with better evaluation of projects, will result in more research efficiency to help solve the current scientific-engineering problem, will help bring about more realistic appraisals, more worthwhile studies and greater courage in dropping stalemated programs in advanced mining.

• Appointment of L. W. "Larry" Darling as manager of government sales of the Davey Compressor Co., Kent, Ohio, was announced today by J. T. Myers, vice president.

Mr. Darling, a graduate of Duke University, School of Engineering, was previously Davey midwestern district manager in charge of the company's Chicago office. His 5 years' Davey experience also includes service as New England district manager. In his new position, he will be located at the company's Kent, Ohio, factory office.

• Bob Drumm has been appointed to represent Baldwin-Lima-Hamilton Corporation, Lima-Hamilton Division, Lima, Ohio, with the line of power shovels and cranes in Kentucky, Southern Ohio, and West Virginia. Mr. Drumm has had broad experience in the earthmoving industry. He was formerly employed in the sales department of the Emmet C. Watson Company, Louisville, Kentucky. The headquarters for Mr. Drumm will be 5024 South Third Street, Louisville, Kentucky.

• The DRAW-IN-DEX cabinet files blueprints safely and conveniently without wrinkles, creases or curled edges. Carefully designed and engineered to meet the problems of every organization that uses blue prints, photostats, charts and photo blow-ups, DRAW-IN-DEX cabinet saves valuable hours that are often spent searching for misplaced prints.



DRAW-IN-DEX cabinet accommodates 1,000 prints. Each print hangs smoothly. An index file locates the prints instantly. All prints

are immediately accessible. Any print can be removed without disturbing the others. The DRAW-IN-DEX cabinet keeps prints safely, neatly and conveniently. Suspension rods support the drawings that are very easily attached to manila hangers. Also newly developed aluminum hangers permit filing a large number of drawings together. They are designed so that when the front panel is opened, any drawing may be immediately filed or removed.

Specifications. 4' high x 2'6" wide x 20" deep. 18 gauge steel top. 16 gauge reinforced steel sides. Index cards and lock are standard equipment. Colors: Grey, Green, Brown (Mahogany). Delivery is immediate. Price: \$139.50 F.O.B. Huntsville, Alabama.

For additional information contact: Berwin Trading Co., 15 Park Row, New York 38, N. Y.

• Refinement in engine design of four Cummins Diesels, manufactured by Cummins Engine Company, Inc., at Columbus, Indiana, has allowed the horse-power ratings for continuous-duty applications to be increased.

Cummins engineers recently introduced a full flow lubrication system and continuous groove main bearings on engine models H-600, HR-600, HS-600, and HRS-600 allowing an increase in continuous operating speeds from 1600 to 1800 rpm. New and old continuous-duty ratings for these engines:

| Cummins Diesel | New Rating | | Old Rating | |
|----------------|------------|---------|------------|---------|
| | hp | rpm | hp | rpm |
| H-600 | 102 | at 1800 | 94 | at 1600 |
| HR-600 | 115 | at 1800 | 106 | at 1600 |
| HS-600 | 140 | at 1800 | 132 | at 1600 |
| HRS-600 | 157 | at 1800 | 142 | at 1600 |

Company officials point out that this increased horsepower and rpm simplifies the application of Cummins Diesels to many types of industrial equipment. The engines may now be coupled directly to centrifugal pumps that operate at a speed of 1750 rpm as well as to generators operating at synchronous speeds of 1800 rpm.

• A new asbestos-aluminum coating for roofs which is reputed to lower under-roof temperatures from 10 to 20° is announced by Paramount Industrial Products Co., Cleveland.

Known as Paramount ALUMA-SEAL, the new roof coating reflects sun rays instead of absorbing them

as do black roof coatings. The manufacturer states that this same feature of reflecting sun rays also retards the drying of waterproofing oils, thus prolonging roof life.

Made of asphalt, asbestos and waterproofing oils doubly pigmented with aluminum, ALUMA-SEAL combines the protective and preservative qualities of the finest roof coating with the insulating and attractive appearance features of aluminum. The manufacturer states that ALUMA-SEAL withstands all extremes of heat and cold without cracking or wrinkling, and is highly resistant to industrial vapors, gases and fumes. It can be applied by either brushing or spraying.

Write for more information. Paramount Industrial Products Co., University Center Station, Cleveland 6, Ohio.

• Your telephone bill will come to you practically untouched by human hands as the result of complicated automatic and electronic accounting devices which received patents recently. These are three of the 834 inventions which were awarded patents.

Patents 2,572,132, 2,572,699 and 2,572,804 were awarded scientists and engineers of the Bell Telephone Laboratories, New York, and assigned by them to Bell. They are: Henry A. Giroud, New York; Gordon C. Irwin, Fair Haven, N. J.; Lindley A. Killie, Morristown, N. J.; John B. Retallack, New York; George Riggs, Port Washington, N. Y.; Walter B. Strickler, East Orange, N. J.; Warren W. Carpenter, Forest Hills, N. Y.; Edward Vroom, Ossining, N. Y.; Erlon W. Flint, Mountain View, N. J.; and Amos E. Joel, Jr., New York.

One of the patents is for a transcribing and summarizing system for gathering together all the items on a subscriber's bill and summarizing them. The patent is pictured in 74 separate drawings of the various electrical circuits and their relation.

Another patent describes equipment which will automatically figure out the amount of tax on your phone bill as well as the charge. Information is fed into the equipment from a keyboard and the equipment does the rest.

The third patent is for an automatic accounting machine which collects the data on bills from various and scattered sources in the records, calculates the charges to be made and translates the records into the form required for printing.



The Model 1006 Osgood shovel operating on the coal seam.



Typical 40 foot highwall, consisting of hard gray shale.

Strip Operation of Vernon Swinehart

When coal stripping was going full blast in World War II and great areas were being stripped to meet the great fuel supply to keep war industry going, the question was often asked "how long can stripping go on." The better informed men in the industry predicted from 30 to 50 years. Considering reasonable improvements in stripping machinery as time went on.

Seeing the new areas being opened by medium size and small stripping equipment, plus the use of the newer and larger size units that

are stripping large acreage which was considered deep mine coal, one must agree that a large portion of this nation's coal supply will come from strip mines 50 years from now.

A territory that seems to be inexhaustible for strip coal production lies in Stark County, Ohio. Near North Industry, Vernon Swinehart is stripping the Ohio Number 5 seam which runs 4 feet thick. Overburden consists of brown and blue shale which is moved without shooting. Stripping

is done with a Model 1006 Osgood shovel having 45 foot boom, 36 foot dipper stick and 2 yard bucket. From 12 to 40 feet of cover is moved. The surface of the coal is cleaned with a Model "D" Allis-Chalmers road grader. Haulage roads are also maintained with this grader. The coal is loaded out with a Model 65 Bay City shovel having 25 foot boom, 20 foot dipper and $1\frac{1}{4}$ yard bucket. Hauling is done in hired trucks to the various industries in and around the city of Canton.



The Model "D" A-C Road Grader cleaning surface of stripped coal.



The Model 65 Bay City shovel loading out stripped coal.



J. W. Wilson, Salem Tool Co., substituting for V. J. McCarthy in presenting the paper, Operating Experience with Salem Coal Recovery Drill. In middle is C. H. Sawyer, E. G. & F. A., substituting for W. L. Morris, and E. R. Cooper, Gen. Mgr. Mines, Jones & Laughlin Steel Corp.

M. H. Forester, Vice Pres. Pittsburgh Consolidation Coal Co., substituted as chairman of the afternoon session. Sitting is Jerome White, Division Eng. for Bethlehem Mines Corp.

Sixth Annual Off-the-Record Meeting of the American Institute of Mining and Metallurgical Engineers

The Sixth Annual off-the-record Meeting of the Pittsburgh Section of the American Institute of Mining & Metallurgical Engineers was held at the William Penn Hotel in Pittsburgh on November 2nd.

At the coal session of this meeting a paper on Coal Preparation and Quality Control has been presented by W. L. McMorris, U. S. Steel Corp.

Mr. C. H. Sawyer of the Eastern Gas & Fuel Associates was Co-Chairman of the session.

Following a movie on the American Way of Life, by Harding Col-



ledge, Searcy, Arkansas, a paper "Development and Operation of the Lee-Norse Continuous Miner" was read by Mr. E. M. Arentzen, President of the Lee-Norse Company.

Following that paper Mr. F. R. Zachar, Division Superintendent, The Christopher Coal Co. read a paper titled "Operating Experiences with the Colmol, manufactured by the Jeffrey Manufacturing Company. Mr. Zachar told of his plans to try the Colmol in longwall work, using a 100 foot face, working on the retreat, using a face conveyor to take the coal from the Colmol.



F. R. Zachar, Div. Supt., The Christopher Coal Co., presenting his paper, Operating Experience with the Colmole.



Jack Long, President, Long Super Mine Car Co., presenting his paper, Piggyback Conveyors.



C. E. McWhorter, Mining Engineer, Goodman Mfg. Co., discussing Jack Long's paper.

This is the nearest thing to automatic mining that has been proposed to date and Mr. Zachar promised this writer a chance to take pictures and write a story about the results of this plan, just as soon as it has been given a fair test.

A paper "Operating Experience with the Salem Coal Recovery Drill" by Mr. V. J. McCarty has been read by Mr. J. H. Wilson, President of the Salem Tool Co. This paper is going to be published in a future issue of COAL MINING, so it needs no comment here.

The "Cardox-Hardsock Auger Miner" was described by H. M. Kepler, Sales Engineer, The Cardox Corporation. This paper dealt with underground mining with augers in hard to get coal.

Mr. A. F. Kain, Sales Engineer, Joy Manufacturing Company presented another paper about underground Auger Mining.

The afternoon session was under the Co-Chairmanship of Mr. Jerome White, Cambria Division Bethlehem Mines Corporation, Ebensburg, Pennsylvania. This session was started with a moving picture film "Power For America." Then Mr. R. U. Jackson, Manager Mining Conveyor Sales and Development, The Hewitt Robbins Company, read a paper, "A Fixed Discharge Shuttle Conveyor."

"Piggyback Conveyors" was the title of the next subject and it was started by Mr. C. E. McWhorter, Mining Engineer, Goodman Manufacturing Company. Jack Long, President, Long Super Mine Car Company, followed Mr. McWhorter with moving pictures of Piggyback conveyors in operation. This publication is making a color moving picture of the "Piggyback" in mines in West Virginia and these will be shown broadly after they are finished.

Mr. W. J. Shields, Assistant Chief Engineer, Rochester and Pittsburgh Coal Company, read a paper "Operating Experience with the Joy Extensible Belt Conveyor," and the meeting was adjourned.

CENTRAL PENNSYLVANIA OPEN PIT MINING ASSOCIATION

17 WEST PINE STREET • P. O. BOX 330

Pittsburgh, Pa.

Mr. P. F. Jasik, Editor
COAL MINING
5403 Clairton Blvd.
Pittsburgh 27, Pa.

Dear Mr. Jasik:

You have my views, via the telephone, on the subject matter of your article on this Association's Field Day in your December issue.

We plead guilty to some extent, perhaps just like other organizations which stage such affairs and have little or no control over the guests.

On the other hand there are extenuating circumstances in our case which in the expiation of our crime should be given consideration.

First, prior to the 1951 Field Day I sent out a query to all our members asking if they wanted a Field Day such as formerly held. The replies were all "yes." I asked the "suppliers" to the industry for their support and they gave it, greater than the year previously.

Second, more people came than ever before so they must have liked it even to the tune of five dollars per.

Just the same, there is merit in your argument, even though our Association is made to bear the brunt of the criticism.

This is what we are up against:

First, our members and patrons appear to want and like a "field day" in the literal and liberal sense of the words.

Second, we have no grandiose country clubs or hotels where such a crowd (350) can be accommodated, each person to his like; that is, to bar or forum.

The other side of the picture is that our Association, throughout the year, and aside from Field Day, holds regular serious and sedate business meetings where there is no liquor, no frivolity and not a little serious forum discussion. Here, breasts are bared, daggers are unsheathed and industry problems are considered as tigers to be slain on an eye-to-eye and sober basis. In fact, you see us AT OUR WORST on Field Day.

Perhaps we can find a way out of the dilemma, a spot where we can have golf, serious speaking or discussion, a bar and dinner; in other words, segregate sin, but gosh-darn it, I don't know where.

I'll assure you we are not taking our annual affair to Pittsburgh where temptation far more alluring than lurks in the heart of the Centre County forests exists.

Very seriously speaking, I consider your criticism constructive, and we shall keep it in mind for 1952.

Now, since our Association has been made to bear the brunt of this criticism, I believe you will be gracious enough to publish this letter to explain what we are up against, and perhaps aid in the moral rejuvenation of other coal, equipment and contractor groups which, according to surface appearances, have become decadent.

Sincerely,

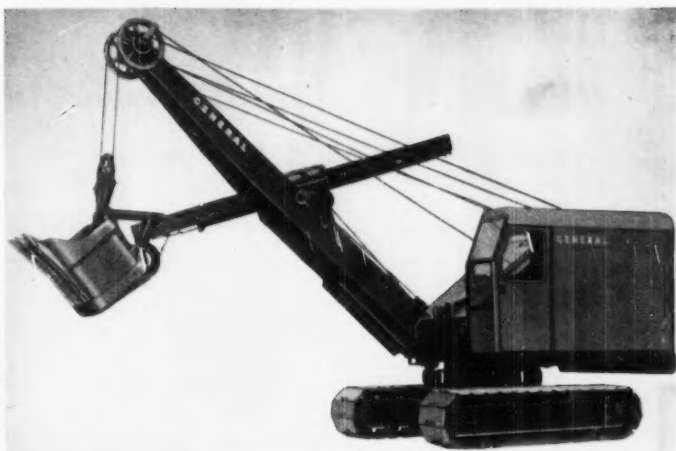
G. ALBERT STEWART
Executive Secretary

GAS:eh

• The GENERAL EXCAVATOR COMPANY announces, after months of on-the-job testing, the newest addition to their line, the Model 320, a $\frac{3}{4}$ cubic yard excavator and material handler, which is now in production at their plant in Marion, Ohio.

GENERAL'S advance design and engineering have been put into the Model 320 to produce a compact sturdy machine, which is economical to operate, simple to maintain, and safer to use.

The crawler base, machinery side frames and the deck, are made of castings and rolled structural steel shapes, used separately or in combination to obtain the maximum advantage of each type of material and construction. Machinery mounted on the superstructure is placed well back on the deck, thus giving an unusual stability and increased lifting capacity, with a minimum amount of dead counter-



weight necessary. Ground bearing pressures are low.

The Model 320 is fully convertible to shovel, clamshell, crane, pile driver, dragline, and hoe work, in the field with a minimum of effort.

The standard shovel boom length is 18'-8", with a dipper handle of 15'-3" effective length. Standard crane boom length is 35'. Standard length of crawler is 11'-4", with 20", 25" or 30" treads available.

INDUSTRY UNITS RECEIVE AWARD FOR EXCELLENT MANAGEMENT

The Lehigh Coal & Navigation Co., Philadelphia, and Pittsburgh Consolidation Coal Co., Pittsburgh, have been awarded Certificates of Management Excellence for the year 1951 by the American Institute of Management, New York. According to Jackson Martindell, president of that non-profit foundation, which is devoted to the study and improvement of corporate organization and management, only 298 firms in the United States and Canada were deemed eligible to receive the designation.

This is the first time Lehigh Coal & Navigation has received the A.I.M. Award. Pittsburgh Consolidation was on the list of "excellently managed" firms a year ago.

In deciding which companies are entitled to the designation, Mr. Martindell explained, credits are given for excellence in ten separate fields—economic function corporate structure, health of earnings growth, fairness to stockholders, research and development, director analysis, fiscal policies, production efficiency, sales vigor and executive evaluation. In order to be certified by the Institute, a company must receive 7,500 points out of a possible 10,000. The point sys-

tem used by the organization is based on a continuing comparative study of 3,000 concerns.

"It is heartening to note," the Institute official declared, "that seventy more firms are receiving awards this year than did a year ago. This proves that companies are tightening up on their methods and procedures and improving their relations with employees, stockholders and the public. We expect this trend to continue, with more and more managements receiving awards each year."

"One of the major purposes of these awards," Mr. Martindell continued, "is to encourage management in all lines of business to give due weight to all ten factors, rather than being especially strong in one or two and neglecting the others."

A Certificate of Management Excellence proves that the company receiving it has attained a proper balance in its efforts and objectives."

The directors of the Institute include William C. DeVane, dean of Yale College; Alfons B. Landa, partner in the Washington law firm of Davies, Richberg, Tydings, Beebe & Landa; and Ordway Tead, editor and Director of Harper Brothers, New York.

Headquarters of the Institute are at 50 Washington Mews, New York.

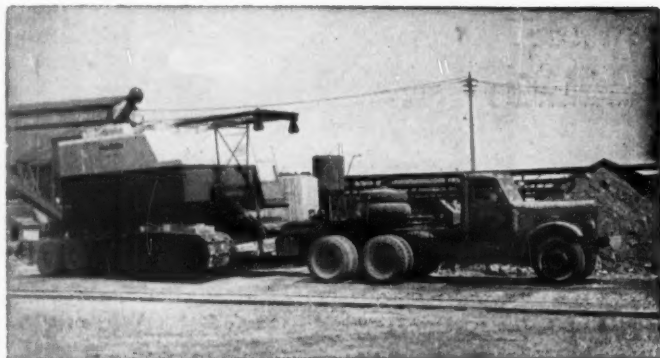
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TWO LOCATIONS

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and

Stoney Hollow Boulevard, Steubenville, Ohio, P. O. Box 547

• Nelson L. Davis Company has been awarded a contract to design and equip a 1250-ton per hour coal cleaning plant using the Dense Media Process for Olga Coal Company at Olga Mine No. 2 near Coalwood, West Virginia.

Run of mine coal from the mine hoist will be fed to a shaker screen scalping off the plus 8" material which will be hand-picked. The plus 8" rock will be crushed and transported to a refuse bin for final disposal by aerial tramway system to the refuse dump.

The crushed 8"x0" raw coal will be delivered to a 4000-ton capacity

blending bin from which the coal will pass over a group of presizing screens removing the minus 1/4" coal which will be used for metallurgical purposes. The 8" x 1/4" raw coal fraction will be cleaned at 1.50 specific gravity in three NELDCO Dense Media Processors.

Mine production will be over three shifts while the cleaning plant will operate two shifts. The cleaning plant will be idle on the third mine shift so that the 4000-ton capacity blending bin will receive coal produced by the mine to subsequently be combined with production of the two remaining mine

shifts so that the aggregate cleaning plant capacity will serve the total mine production.

Facilities will be provided for disposal of washery rejects and the final clean coal will be screened and boom loaded to cars with five individual coal sizes. A sixth track will be provided for loading 1/4" x 0 coal.

Dust collection facilities will be installed at all stations in the plant where raw coal is handled.

An interesting innovation in this plant will be the installation of water tanks which will receive the plus 1/4" coal to remove tramp wood which is objectionable when found in the cleaned coal product, particularly in connection with the stoker sizes.

• The Rish Equipment Company which has General Offices at Bluefield, W. Va., and branch offices and service centers at Charleston and Clarksburg, W. Va., Richmond and Roanoke, Va., and Cincinnati, Ohio, to serve a six state area, has issued a pamphlet listing the names of manufacturers it represents, the list of employees at each branch and shows pictures of some of the larger strip mines and big projects on which its equipment has been used. A copy of the pamphlet can be had from any one of the branches.



Walter P. Paepcke, Chairman of the Board of K. W. Battery Company, today announced the completion and occupancy of a new \$500,000 manufacturing plant, research laboratory and executive office for the company at 3555 Howard St., Skokie, Illinois.

According to Emanuel Loewenherz, company president, the new plant facility will double K. W.'s production and will permit the company to streamline its manufacturing operations on a ground level plan. The new plant totals 50,000 square feet and has been designed and engineered to provide added production and service facilities to meet mounting needs for expansion in the company's long-term program of service to industry and the nation's defense production program.

• A new cubic yard mining and quarry type machine described as the world's largest, most powerful shovel on two crawlers is being announced by Marion Power Shovel Company of Marion, Ohio.

It is the MARION 191-M for which many impressive performance features are claimed, including the following:

1. A 10 cubic yard heavy duty shovel with small-machine cycle time.
2. More strength and more power, in terms of digging effort and speed, per cubic yard of capacity.
3. Greater travel speed and maneuverability than most small machines.
4. Loads trucks of the 50 ton class in three or four passes.
5. Loads gondola rail cars quickly.
6. Heavily built throughout for the world's toughest digging jobs.
7. Electric or diesel electric power.
8. Ward-Leonard control.
9. "Amplidyne" or "Rototrol" application of electric power.
10. Production potential of over half a million yards per month.

One of the earliest uses of the 191-M will be as a working companion for new, large truck haulage units in the 50 ton class. There has been a definite trend for several years toward larger trucks in several industries, and the MARION 191-M has capacity to load them in 3 or 4 passes.

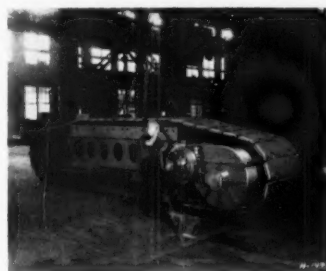
• A new application bulletin, descriptive of RUST-CURE anti-rust paint, is announced by The Monroe Company, Inc., Cleveland.

According to the manufacturer, RUST-CURE can be applied on rusted surfaces without wire-brushing, scraping or sandblasting. Consequently, it cuts maintenance costs by greatly reducing the tremendous amount of time and labor required to paint corroded metal by ordinary methods.

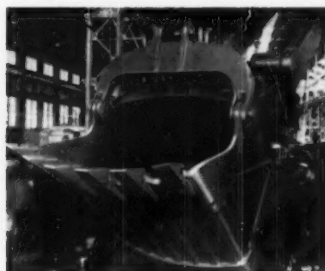
RUST-CURE, the manufacturer states, seals rusted surfaces and retards further rusting action. It is



Marion's new 10 cubic yard machine, the 191-M, was designed to meet the needs of the trend toward larger haulage units. It is teamed here with one of the largest truck units developed to date, a 50-ton Euclid rear dump, which it loads in four passes.



The crawler shoe frames are made of welded steel and are equipped with "built-in" integral gear cases.



Snapp view of the 191-M's 10 cubic yard dipper which is now loading a 50-ton truck in four passes.

available in black, aluminum and clear and can be applied by brush, dip or spray methods, indoor or out.

For bulletin copies, write The Monroe Company, Inc., 10703 Quebec Ave., Cleveland 6, Ohio. Ask for bulletin 136-11.

Ayrshire Collieries Corporation of Indianapolis, Indiana, announced the promotion of Roy E. Dean to the position of Assistant to the President. Mr. Dean succeeds G. Don Sullivan, who resigned to join the staff of National Coal Association in Washington, D. C.

Mr. Dean, following Army service in the African and European Theaters during World War II, joined the Ayrshire organization in 1946.

Mr. Sullivan has for some months been acting as Assistant Chairman of our Coal Defense Committee, handling various problems growing out of the Korean emergency. On September 1st, he joined the staff of the National direct and will carry on this same type of work plus other assignments. He brings to N. C. A. a long experience in the coal industry.

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JACKS FOR ROOF TIMBERING
and
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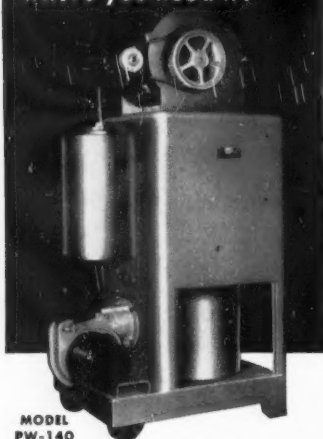
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give you heat instantly
where you need it!



MODEL
PW-140

140,000 B.T.U. per hr.
(no chimney or flue)
Other models available in 160,000
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HEAT MEN AT WORK—NOT EMPTY SPACES



Just snap the switch!

Your Fageol Heat Machine will instantly pour out heat for keeping men warm at work, thawing materials and equipment, drying, treating, curing, heating buildings... 1,000 plus one other uses.

By blowing warm air out along the floor or ground, each Heat Machine creates a 6 ft. high heat blanket over areas from 1,600 to 3,000 sq. ft. Unlike ordinary space heaters, they heat where men work. Consequently, operating on No. 1, 2 or 3 fuel oil or kerosene, they save greatly on fuel costs.

Write today for Bulletin L-4782.

A-4782



HEAT
THE
Fageol
WORK
ZONE

FAGEOL HEAT MACHINE CO.

5725 Mt. Elliott Ave., Detroit 11, Mich.

• Appointment of Harry M. Hadley as sales manager of the Fageol Heat Machine Company, Detroit, is announced by H. W. Fagert, president.



HARRY M. HADLEY

Hadley, formerly east coast sales engineer for The Coleman Company, Inc., of Wichita, Kansas, will direct nation-wide distribution for Fageol Heat Machine Company's line of portable industrial heaters. These range in capacity from 140,000 to 200,000 B.T.U.

A graduate of Marietta College, Hadley served in the U. S. Navy in the Pacific during World War II.

• A new technical bulletin descriptive of ICE REM, ice and snow-melting chemical crystals, is announced by Speco, Inc., Cleveland.

ICE REM, it is stated, possesses a thawing capacity 30 times greater than that of salt. Sprinkled on the exposed surface at the beginning of a snow or sleet storm, it is reported to melt snow on sidewalks, driveways, loading docks, streets, parking lots—or any other area—during that and subsequent snows until its Exothermic action is exhausted. Reports from the manufacturer state that it "spreads itself" and leaves no messy residue.



One of the ten recipients of a 1951 Lewis and Conger Safety Award, ICE REM represents a modern, efficient method of snow and ice removal. It will not harm tires, shoes, asphalt surfaces or concrete.

ICE REM is available in 10 lb.

cans, 25 lb. pails and 100 lb. fibre drums. Ton lots are shipped in waterproof 100 lb. bags. For bulletin copies, write Speco, Inc., 7308 Associate Ave., Cleveland 9, Ohio. Ask for L-4656.

• Mr. A. J. Miller has been added to the sales staff of A. T. Green Machinery Co., Route 8, Glenshaw, Pa. He will cover the Counties Clarion, Indiana, Jefferson, Cambria, Clearfield, Blair, Clinton, Centre and Huntington, in Pennsylvania.



Mr. Miller is a graduate engineer from Marquette University in Milwaukee and has had five years experience studying and selling excavating machinery, the last three in sales work in Eastern Ohio and Northern West Virginia.

• A 6-page bulletin describing the new line of Fageol Heat Machines is announced by the Fageol Heat Machine Company, Detroit.

Printed in two colors and illustrated with photographs and line sketches, the bulletin explains the Fageol Heat Machine principle of spraying heated air out at floor level to form a blanket of warm air in the working area where it's needed, instead of overhead where it's wasted.

Two models, the PW-140 (140,000 BTU unvented portable) and the VO-160 (160,000 BTU with vent optional) are fully illustrated in the bulletin and complete dimensions and specifications are listed. (Other 200,000 BTU models are also available.)

A few of the many applications for the highly portable, oil-burning Heat Machines are shown in line sketches in Bulletin L-4782. These applications range from office and factory use to heating construction machinery, drying concrete, and heating warehouses.

Write for Bulletin L-4782, Fageol Heat Machine Company, 5725 Mt. Elliott Avenue, Detroit 11, Michigan.



George W. Vickory of Carbon Coal Co., Grove City, Pa., tries the controls of the 225 h.p. "Caterpillar" DW20 Diesel Tractor as Lloyd F. Stamy, Pittsburgh Sales Manager for Beckwith Machinery Company, points out features of unit hauling "Caterpillar" W20 Wagon with a heaped capacity of 25 cu. yds.



• M. F. Cunningham, vice-president in charge of sales, Goodman Manufacturing Company recently announced the appointments of Paul Johnson and Charles Hoyt as sales engineers to the staff of the company's Pittsburgh office. Mr. Johnson will make his headquarters at Fairmont, West Virginia. Mr. Hoyt will center his activities in the Ohio field. Both men received degrees in mining engineering at the Colorado School of Mines.

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Type AD Hor. Split Case, Two Stage Centrifugal



Type OD Hor. Split Case, Double Suction Single Stage Centrifugal



NSA Aurora Centrifugal Sump Pump



Type GMC Close-Coupled Centrifugal



Type GGU Side Suction Single Stage Centrifugal

Aurora Pumps are the products of Experience. The Aurora Personnel has one objective—the building of fine pumps. We are not jacks of all trades. We are exclusive pump builders. The splendid record of thousands of Aurora Pumps on a myriad of war services is your assurance that your post-war needs will be superbly taken care of as you, too, install "Pumps by Aurora."

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APCO TURBINE-TYPE PUMPS—the simplest of all pumps. Ideal for small capacity, high head duties. Silent, compact and lasting.



APCO Single Stage Turbine-Type



APCO Horiz. Condensation Return Unit

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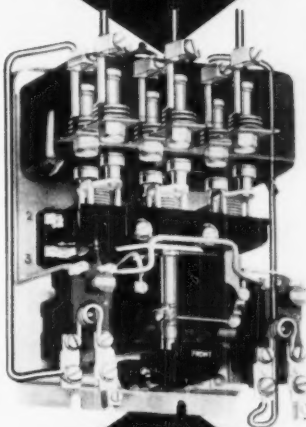


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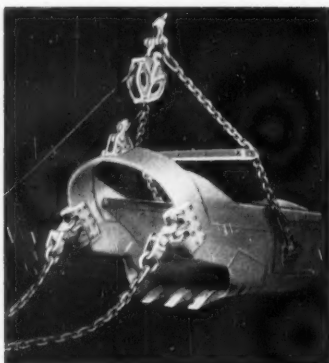
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Features the combined advantages of strong multi-turn magnetic blowouts and twin break contacts—a "first" in electrical control history.

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- Finger Clips for Easy Contact Inspection.

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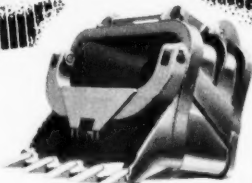


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The MAMCO Dipper

For Cleaner Coal—

Faster Loading—Larger Capacities



CHECK THESE OUTSTANDING FEATURES:

- ✓ Wide mouth, shallow body for low coal seams
- ✓ Flat lip and long sharp teeth—parts coal at seam
- ✓ Tapered body with larger opening at the rear for quick dumping
- ✓ Tough, rolled steel plate body—lighter in weight—greater in strength
- ✓ Cast manganese steel lip with inserted manganese steel tooth points—for greatest resistance to shock and abrasion
- ✓ All welded construction—no rivets to work loose

Capacities up to 7 Cu. Yds.

Write today for data sheet on Mamco dippers. No obligation.

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ALTOONA, PA.

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COAL PREPARATION PLANTS — OPERATING SUPPLIES**



WOOD TAMPING POLES

For Tamping Explosive Shots: Poles are round made of Hardwood. Sizes to 10 ft. long.

| | |
|-------------|--------------------|
| 1" Dia. | 5c per lineal ft. |
| 1 1/2" Dia. | 12c per lineal ft. |
| 1 3/4" Dia. | 14c per lineal ft. |
| 1 1/2" Dia. | 14c per lineal ft. |
| 1 3/4" Dia. | 18c per lineal ft. |
| 1 1/2" Dia. | 28c per lineal ft. |
| 2" Dia. | 32c per lineal ft. |

Special diameters and lengths can be furnished. These Poles meet the requirements of the New Federal Mine Safety Code.

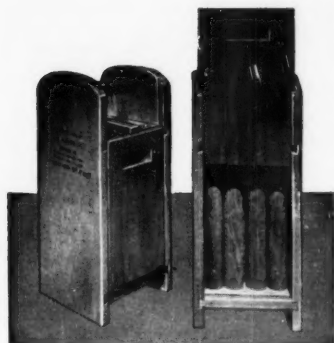


SECTIONAL TAMPING POLES

These Poles are made of straight grained wood and are coupled together with removable wood pins held in place in recessed grooves by a rubber band and can be quickly connected and unconnected.

Couplers and Head Blocks are 4, 5, and 6 inches in diameter. Please specify size when ordering. Poles are 1 1/2 inches in diameter.

| | | |
|-------------------|-------------|------------|
| Head Blocks | 4" Dia. | \$1.70 Ea. |
| Couplers | 4" Dia. | 3.90 Ea. |
| Poles 12 ft. long | 1 1/2" Dia. | 3.60 Ea. |
| Poles 14 ft. long | 1 1/2" Dia. | 4.20 Ea. |
| Poles 16 ft. long | 1 1/2" Dia. | 4.80 Ea. |
| Poles 18 ft. long | 1 1/2" Dia. | 5.30 Ea. |
| Poles 20 ft. long | 1 1/2" Dia. | 7.00 Ea. |
| Poles 22 ft. long | 1 1/2" Dia. | 8.80 Ea. |
| Poles 24 ft. long | 1 1/2" Dia. | 9.60 Ea. |



EXPLOSIVE BOXES: Made entirely of wood having no metal parts, tongue grooved and dovetailed construction with automatic lock using a rubber band for a spring, treated with paraffin to make moisture resistant. "Approved by the Pennsylvania Department of Mines." Sizes as listed based on 1 1/4" x 8" sticks.

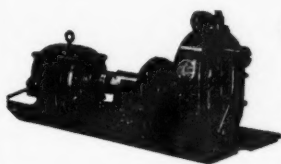
Powder Box Prices are as follows:

| | | | |
|-------------------|------------|-------------------|------------|
| No. 8 Powder Box | \$2.55 Ea. | No. 25 Powder Box | \$5.10 Ea. |
| No. 12 Powder Box | 2.95 Ea. | No. 36 Powder Box | 6.50 Ea. |
| No. 16 Powder Box | 3.45 Ea. | No. 50 Powder Box | 7.60 Ea. |
| No. 20 Powder Box | 3.90 Ea. | No. 72 Powder Box | 8.70 Ea. |

Detonator Box Prices are as follows:

| | | | |
|------------------------------------|------------|------------------------------------|------------|
| No. 6 size 2 1/2" x 3" x 6" inside | \$2.15 Ea. | No. 8 size 2" x 2 1/2" x 8" inside | \$2.10 Ea. |
|------------------------------------|------------|------------------------------------|------------|

J. V. Hammond Company Spangler, Pennsylvania



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Don't let winter cold stall your construction and maintenance jobs! Silent Glow forced air heaters will thaw frozen ground and pipes . . . keep workmen warm . . . pre-heat equipment for easy starting and operation. Ideal for use in buildings under construction . . . drying and curing plaster, paint, concrete. No smoke! No odor! See your Highway representative today.

A-4498

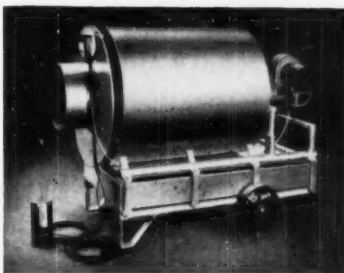
Highway

EQUIPMENT COMPANY

6465 Hamilton Ave.

Pittsburgh, Pa.

Phone EMerson 1-3600



Silent Glow Model B portable forced air automatic oil heater. Output—350,000 B.T.U. per hour.

SALEM "HERCULES" AUGERS FOR ELECTRIC DRILLS

Made To Withstand High Drilling Speed, Whip And Torsional Strain Of Electric Drills



Drills holes faster—Will not snap off shank or chip points—Outlasts four or five ordinary augers.

THE SALEM TOOL COMPANY

SALEM, OHIO, U.S.A.

DRAGLINE BUCKETS

Geo. L. Wilson & Co.

Office & Warehouse - 310 Mendota St. - Pittsburgh 12, Pa. - CEDAR 1-7710

SPECIAL BARGAIN
3 Type A3G Goodman Duck bills.
COAL DRILLS
2 Jeffrey—250 v. DC.
COMPRESSORS—SPECIAL BARGAIN
7—240 cfm Westinghouse 3 cyl. vert. 150 lb. pres. dir. con to 50 HP. AC Slip ring or DC Motors.

| MOTOR GENERATOR SETS—250 V. D.C. | | | |
|----------------------------------|-----|------------------|------|
| No. | KW | Make | RPM |
| 3 | 250 | Westinghouse | 1200 |
| 1 | 200 | Westinghouse | 720 |
| 2 | 200 | Westinghouse | 1200 |
| 1 | 100 | Westinghouse | 700 |
| 1 | 100 | General Electric | 900 |
| 1 | 100 | Westinghouse | 600 |
| 1 | 100 | General Electric | 1800 |
| 1 | 100 | Reliance | 580 |
| 1 | 100 | Delco | 1200 |
| 2 | 90 | Westinghouse | 680 |
| 4 | 75 | Westinghouse | 1200 |
| 1 | 75 | Westinghouse | 1200 |
| 1 | 60 | Westinghouse | 1200 |
| 1 NEW | 50 | General Electric | 1800 |
| 3 | 40 | Westinghouse | 900 |
| 2 | 30 | Westinghouse | 720 |

125 V. DC M.G. Sets
1—100 kw. G.E. 125 v. 900 rpm. 220/440 v.
3 ph. 60 cy. AC Syn.
1—125 kw. G.E. 125 v. 1200 rpm. 220/440 v.
3 ph. 60 cy. AC.
1—75 kw. West. 125 v. 1200 rpm. 220/440 v.
3 ph. 60 cy.

| D.C. Generators—250 v. D.C. | | | |
|-----------------------------|-----|-------------|-------|
| No. | KW | Make | Speed |
| 1 | 250 | West. | 1200 |
| 1 | 175 | G.E. | 700 |
| 3 NEW | 135 | G.E. | 1150 |
| 1 | 125 | West. | 560 |
| 1 | 125 | Allis-Chal. | 1150 |
| 1 | 110 | West. | 700 |
| 1 | 100 | Allis-Chal. | 1150 |
| 1 | 75 | West. | 750 |
| 1 | 40 | G.E. | 720 |

HOISTS OR WINCHES
200—1½ ton Hand Cranked ratio 27:1 thru an enclosed double reduction gear unit with 4 planetary gears mounted on steel plate complete with 48' of ¼" cable, ratchet type brake, push button release.

CAR PULLERS
100—Brand New with ¼" cable, 1½ and 2 ton A.C. or D.C. Motors.

COMPRESSORS
1—315 CFM Ingersoll Rand Portable, 100 lbs. pres. driven by 105 HP Waukesha Oil Engines, 560 rpm.

BARGAIN—FOR SALE
100 KW. Diesel Engine Generator Sets
11—100 KW. 250/275 v. D.C. Delco Generators dir. con. to 150 H.P., Model GBD-8, 8 1/2 x 7. 8 cyl. Superior Diesel Engines, electric starting with muffler, power panel and accessories.

Practically as good as new—
Only Used for spares.

DUQUESNE ELECTRIC & MANUFACTURING CO.

Phone MONTrose 1-5800

Pittsburgh, Pa.

FOR SALE

Immediate delivery 1 P&H Model 1400 Electric Stripping Shovel, guaranteed condition, 48 ft. boom, 34 ft. sticks, 3¾ yd. bucket, large inventory of parts.

Harmon Creek Coal Corporation
1606 First National Bank Bldg.
Pittsburgh 22, Pennsylvania
Phone GRant 1-1474

250 Tons No. 1—70 lb. Relaying Rails in 30 foot lengths
Complete with Angle Bars to match
Write — Wire — Phone
SONKEN-GALAMBA CORP.
2nd and Riverview (X-812)
Kansas City 18, Kans. THatcher 9243

FOR SALE OR LEASE

Coal lease of 1800 acres West Kentucky No. 9, 11 and 12 coal. Estimated to be 1,000,000 tons. Lease includes rail track lease for 25 cars per day with truck ramps.

MULLIGAN COAL CO., INC.
Box 319, Greenville, Kentucky

RELAYING RAIL

TRACK ACCESSORIES

Midwest Steel Corp.

Charleston 21, W. Va.
Telephones LD-98 or 21-121

NEW AND REBUILT STORAGE BATTERY LOCOMOTIVES

Any Size Any Track Gauge
GREENSBURG MACHINE CO.
Greensburg Pennsylvania

FOR SALE

Coal Tipple complete with steel structure, storage bin, refuse bin, conveyors, 24 & 36 inch belt. Electric motors.

Also used 9x14 foot used Bradley Breaker.

Will sell all or part.

Call or Write:

BOYER & VINEVERSKY, INC.

Coal Strippers 1303 Airport Road
R. D. 6, Pittsburgh 27, Pa.
Phones: Plantation 1-6662
Evenings — Colonial 3-6666

Please Say You Saw It In Coal Mining

FOR SALE

Finfield Portable Conveyor 30' x 60'
Wisconsin gas motor—hydraulic—new.
Jeffrey L. 600 loading machine and parts.
Jeffrey L. 400 loading machine and parts
Goodman 41E flame-proof 6-ton Loco.
Myers-Whaley loading machine.
Iron-ton 8-ton Battery locomotive—42
Joy 8 BU loading machine and C-P drill
A C motors up to 150 hp. to 1150 rpm.
Jeffrey 35-B cutting machine and drill
Jeffrey and Goodman machine trucks.
Goodman 512 and 124-AA top cutter.

T. L. (Les) Simpson

1200 Woodbourne Ave. Pittsburgh 26, Pa.
Phone Lehigh 1-2254

RAILS NEW AND RELAYING TRACK ACCESSORIES "FASTER FROM FOSTER"

Try us for all of your rail needs. We're buying daily—replenishing our stocks in all sizes. Complete stocks of All Track Tools & Accessories.

PIPE & PILING & WIRE ROPE & SLINGS

LB FOSTER CO.

Pittsburgh 30, Pa. New York 7, N.Y.
Chicago 4, Ill. Houston 2, Tex.



COAL MINING

FEBRUARY, 1952

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OSGOOD

Dragline provides unequalled smoothness and speed for stripping



The extra-fast OSGOOD Model 1007 Dragline shown above is owned by Serge Coal Company of Franklin, Pa., and is stripping coal near Hamilton. It has a 70-ft. boom and a 3-yd. dragline bucket.

One big reason for the yardage-boosting performance of Model 1007 is instant, accurate, smooth OSGOOD Air Control of hoist, swing, travel, steering, and power take-off. Patented OSGOOD Air Cushion Clutches . . . Independent Boomhoist . . . swivel-type fairlead with stem and rotating sheave in anti-friction bearings . . . 6 hook rollers for super stability . . . demountable side frames . . . collapsible extended gantry . . . quick conversion to clamshell or crane . . . these are only a few of the plus values. Write today.



EQUIPMENT DESIGNED WITH YOUR PROFIT IN MIND

DISTRIBUTOR:

UNITED SALES CORPORATION

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SNOW-REM
SNOW PLOW WAX
Carnauba and SILICONE
Makes snow removal faster, easier, cheaper.

SPECO, INC.
7308 ASSOCIATE AVE. • CLEVELAND 9, OHIO

5151
The OSGOOD COMPANY
MARION, OHIO
AFFILIATED WITH THE GENERAL EXCAVATOR CO.

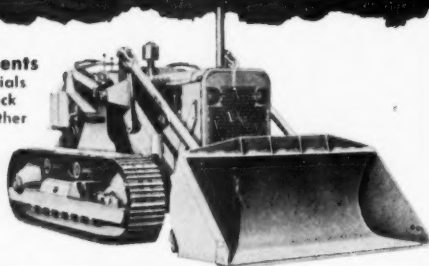
POWER SHOVELS, CRANES
DRAGLINES, CLAMSHELLS
PILE DRIVERS & BACK HOES
CRAWLERS & MOBILCRANES
DIESEL, GASOLINE OR
ELECTRIC POWERED
CAPACITIES 1/4 TO 21 1/2 CU. YD.

NOW... Front-End Shovels for ALL 4 New ALLIS-CHALMERS Tractors

14 Interchangeable Attachments
Standard Buckets • Light Materials Buckets • Heavy-Duty Buckets • Rock Forks • Bulldozer Blades • Plus other attachments for some models

Standard Buckets up to 4 cu. yd.

(light materials buckets up to 7 cu. yd.)



1-Yd. HD-5G

2-Yd. HD-9G

3-Yd. HD-15G

4-Yd. HD-20G

Introducing a New Era of Tractor Usefulness . . .

These new Tractomotive shovels on the larger size Allis-Chalmers tractors now bring you the same wide utility, the same outstanding perform-

ing ability as has been demonstrated by the popular HD-5G — the Tracto-Shovel that revolutionized excavating and material handling



**EQUIPMENT
COMPANY**

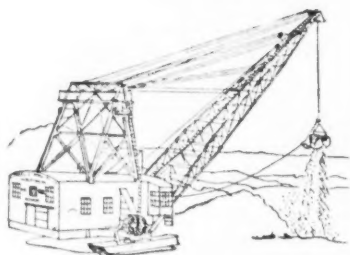
6465 Hamilton Avenue
Pittsburgh, Pa.

Baker • Gar Wood • Hough • Master •
Thor • Wayne Crane • General Motors
Diesel Engines • Erie Bins • Lima Shovels,
Cranes, Draglines • Mandt

A-4523

—85th YEAR OF SERVICE—

\$11,585,283.79



TO FINANCE PRODUCTIVE MACHINERY

Since World War II the MARKLE BANK has helped business by lending \$11,585,283.79 to finance productive machinery such as shovels . . . draglines . . . bulldozers . . . trucks . . . textile machinery and the like . . .

**MAY WE HELP YOUR FIRM BRING
ITS MACHINERY UP TO DATE**

MARKLE BANKING and TRUST CO.
HAZLETON, PA.

Member Federal Reserve System and Federal Deposit Insurance Corp.



—SAVE ON PAY DAY—



We take twice the care...

Two of the inspections for fuel pump gears, checks for thickness and parallelism of faces, determine whether machining tolerances to within five ten-thousandths of an inch were held on these parts.

CUMMINS® DIESEL PARTS give more service!

When your Cummins Diesel requires scheduled overhaul or non-scheduled emergency service, install Genuine Cummins Parts. Because we take *twice* the care in manufacture, every Genuine Cummins Part fits exactly, has longer life, gives you trouble-free service. You'll get added years of dependable performance from your Cummins Diesels when you *insist* on Genuine Cummins Parts.

Only Cummins Dealers, located from coast to coast, sell Genuine Cummins Parts. Contact the dealer nearest you from the list below.

CUMMINS ENGINE COMPANY, INC. • COLUMBUS, INDIANA

**Diesel power by
CUMMINS**



TRADEMARK REG. U. S. PAT. OFF.

(1-1-52)

PHILADELPHIA, Cummins Diesel Engines, Inc.: 209-13 North 22nd Street, Philadelphia 3, Pennsylvania, Telephone Rittenhouse 6-4460. Branches: Hoffman Boulevard and Chestnut Street, Ashland, Pennsylvania; 6501 Hamilton Avenue, Pittsburgh 6, Pennsylvania; 614 Light Street, Baltimore 30, Maryland. . . . **DOVER, Cummins Diesel Sales Corporation of Ohio:** 113 North Wooster Avenue, Dover, Ohio, Telephone 42351. Branches: 3827 Spring Grove Avenue, Cincinnati 23, Ohio; 741 Grandview Avenue, Columbus 8, Ohio; 3560 East 93rd Street, Cleveland 5, Ohio; 2883 West Market Avenue, Akron, Ohio. . . . **CHARLESTON, Cummins Diesel Sales & Service, Inc.:** 1603 Kanawha Boulevard, West, Charleston 30, West Virginia, Telephone Capital 27-178. . . . **LOUISVILLE, Cummins Diesel Sales of Louisville, Inc.:** 2209 Taylorsville Road, Louisville 5, Kentucky, Telephone Cherokee 2616, 2617, 4621 and 4622.

In strip and deep mines,
leading operators prefer

DAVEY!

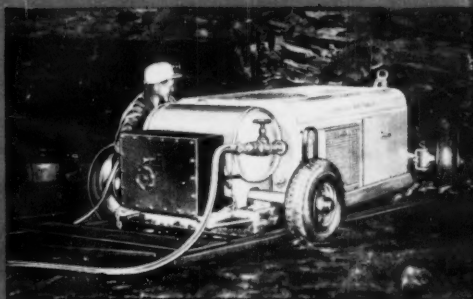


Davey Model 105 at Paul E. Kerlin Coal & Construction, Inc. strip mine near Export, Pa.

REGARDLESS of the nature of your operating requirements, you can always depend on Davey Compressors to do the job right.

Davey manufactures a complete line of portable and mine car compressors from 60 to 315 c.f.m. capacities... "Auto-Airs" (truck-mounted compressors driven from truck engines through Davey Power Take-offs)... Field Service Units and Mobile Machine Shops.

Your Davey mine equipment distributor will be glad to consult with you about your compressed air problems. May we suggest that you phone him today.



Davey Mine Air Compressor on roof-bolting job in Kentucky mine. Low height (32" to 37" for various size models) enables these units to operate "right next to the job" in many locations inaccessible to ordinary mine compressors.



Davey Field Service Unit repairs scraper on strip job. These units contain an "Auto-Air" Compressor, welder, lubricating and tire inflation equipment... all equipment necessary for handling every mine service, repair and maintenance need.

DAVEY

*pioneers of
air-cooled air*

DAVEY COMPRESSOR CO. • KENT, OHIO